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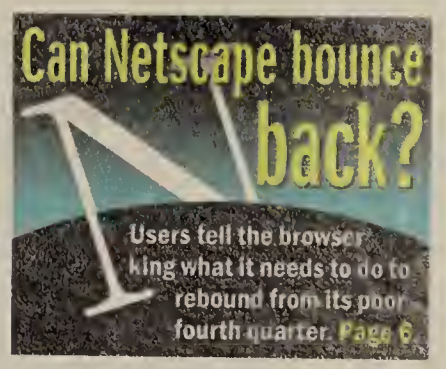
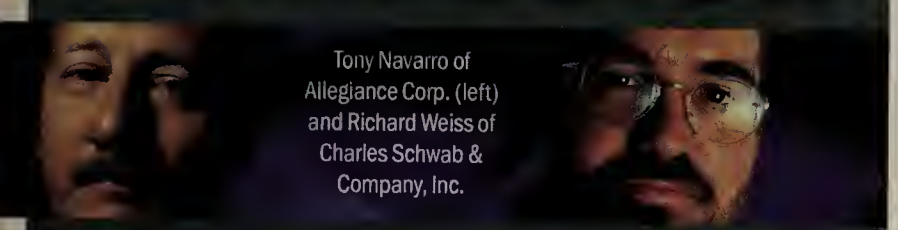
JANUARY 12, 1998 VOLUME 15, NUMBER 2

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



Management marathon



Tony Navarro of Allegiance Corp. (left) and Richard Weiss of Charles Schwab & Company, Inc.

Profiles of CA and Tivoli users shed light on the tortuous road to network and systems management nirvana.

Implementing an enterprise management framework is like undergoing major surgery. It's not a pleasant experience, but if performed properly, you'll eventually benefit from it.

That's what we learned from visiting with two successful implementers of the leading frameworks. Medical products manufacturer Allegiance Corp. chose Computer Associates International, Inc.'s Unicenter TNG, while brokerage giant Charles Schwab & Company, Inc. invested in Tivoli Systems, Inc.'s TME.

Turn to page 38 for insight into what these buyers hope to gain and how much effort it will take to make it happen.

PHOTOS: JEFF SCIORTINO (LEFT), EDWARD CALDWELL (RIGHT)

AT&T jumps back into the local loop

By David Rohde
New York

After two years of false starts, complaints and excuses, AT&T finally is jumping back into the local access market.

The long-distance giant last week said it will spend over $11 billion to acquire Teleport Communications Group, Inc. (TCG), an industry-leading competitive access provider with facilities in 57 U.S. markets.

The move reverses the field for AT&T by giving the company its own broadband metropolitan facilities to connect user locations to AT&T voice and data switches, rather than relying on what became a nearly fruitless effort to resell regional Bell operating companies' phone lines.

Just as important, the move appeared likely to eventually break the competitive logjam in the telecom industry. Analysts said the acquisition may finally give RBOCs the legal rationale they need to convince regulators the carriers have local competition.

See **AT&T,** *page 16*

HOT PROPERTY

PROFILE: TELEPORT COMMUNICATIONS GROUP, INC.

Headquarters:	Staten Island, N.Y.
1996 revenues:	$283 million
Service offerings:	Local voice, data, private-line, wireless and Internet access services in 57 metropolitan areas nationwide
Network:	8,700 miles of fiber-optic cable

Microsoft reverses its NT course

Firm paves NT 5.0 migration path for Version 3.51 users.

By Christine Burns
Redmond, Wash.

What a difference a year makes.

In a significant about-face, a top Microsoft Corp. official said the software giant will offer a direct migration path from existing Windows NT 3.51 servers to NT 5.0 when the new version of the operating system hits the streets late this year.

Until now, the software giant had said NT 3.51 users first would have to upgrade all of their servers to NT 4.0 before they could move on to NT 5.0. That development angered the NT 3.51 user community, which at the beginning of 1997 comprised more than 70% of the NT installed base (*NW,* Jan. 27, 1997, page 1).

See **NT,** *page 53*

KATHLEEN KING

"There are just some customers who won't budge from NT 3.51, so we have to give them a way to get to NT 5.0 without using NT 4.0."

Jim Allchin, senior vice president of Microsoft's Desktop and Business Systems Division

Wanted: Y2K whistle-blowers

By Paul McNamara

A prominent Year 2000 consultant is urging IT professionals to rat on employers and suppliers who are recklessly failing to deal with the Year 2000 problem.

Dubbed Project Damocles by its creator, Year 2000 author/consultant Peter de Jager, the recently launched campaign is *not* designed to publicly expose its targets or their products, at least not immediately. Instead, Damocles will wield as its sword the one weapon every corporate executive understands and fears: legal liability.

De Jager coauthored the book *Managing 00,* and his Year 2000 Web site, The Year 2000 Information Center, receives 250,000 hits per month at www.year2000.com. Here is how he envisions Damocles working.

Someone identifies a looming Year 2000 failure, and, despite providing the responsible parties with proof, no code fix or public acknowledgement follows. De Jager said he was prompted to unsheath Damocles after a num-

See **Damocles,** *page 14*

Sun to bolster Java security

By Ellen Messmer and Chris Nerney

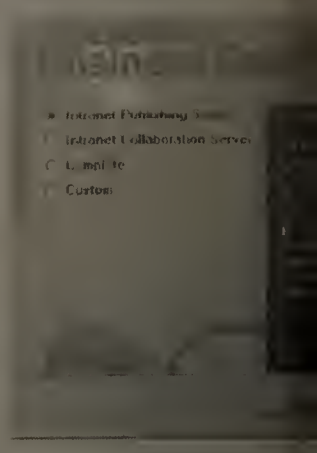
Sun Microsystems, Inc. today will unveil a set of Java cryptography tools that company officials say will vastly improve security for Java applets and put edgy users at ease.

The tool kit, Java Cryptography Extensions (JCE) 1.2, will let developers create applets and applications that can be digitally signed, encrypted and transmitted via secure streams, according

See **Sun,** *page 53*

Windows NT Server
Exchange Server
SQL Server
Site Server
Systems Management Server
Proxy Server
SNA Server

BackOffice Server 4.0



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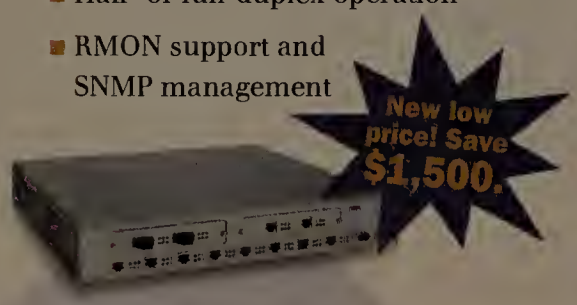

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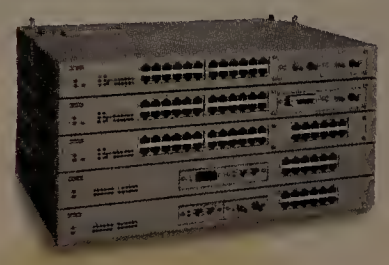

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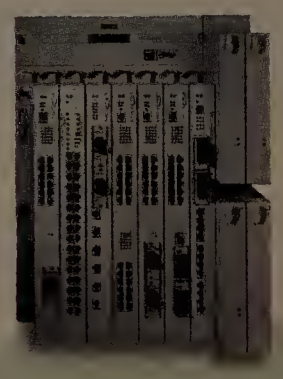

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STAN BAROUH

NT USER UNITY

Charles Kelly, head of the booming worldwide NT users group, has NT 5.0 on his mind. Page 17.

SWITCH SIZZLE

Cisco's new auto-sensing 10M/100M bit/sec switches boast flexible configurations and low per-port prices. Page 14.

PLAYING IT SAFE

Author/IS Director Lincoln Stein has written the book on Web server security. Page 31.

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Everything you need to make your time at the show useful. Check out our best picks for each day as well as where to go on the Web for an insider's guide to the town.

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JEFF SCIORTINO

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www.nwfusion.com

This Week

Only on Fusion

Electronic commerce. A growing number of network administrators are making increasingly large purchases online – Cisco says 38% of its orders now come over the Web. But while online-buying can mean quicker turnarounds and fewer configuration problems, you might miss out on the best prices – or have difficulty navigating complex ordering systems. **DocFinder: 5324**

WAN services. Does AT&T's planned purchase of Teleport Communications Group mean competition is really coming to the local loop? And if so, should the RBOCs be allowed into long distance? Our online conference on the topic widens this week as executives from MCI and BellSouth come online to debate with each other – and with you. **DocFinder: 5302**

A Fusion tip

We have two databases for finding information online. FusionFinder lets you search through our other online resources (such as our online primers) as well as search for articles with additional, hyperlinked information. The *Network World* Database lets you search for the text versions of every *Network World* article published in the last three years. You'll find both by clicking on the Search button on any page.

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News briefs, January 12, 1998

Microsoft in the palm of your hand

■ Microsoft Corp. last week rolled out its Palm PC, a handheld personal computing device that will enable offline Web viewing, wireless communications and handwriting recognition. Microsoft will ship its Palm PC software to OEMs this quarter.

So far, seven hardware manufacturers have announced support for the software, including Casio Computer Company, Ltd., FIC Group, LG Electronics, Inc., Palmax Technology Company, Ltd. and Samsung Electronics America, Inc., Microsoft said.

A good Atmosphere for the network industry?

■ Start-up Atmosphere Networks, Inc. this week will pull the wraps off its line of fiber-access multiplexers, which deliver fractional T-3 (45M bit/sec) and fractional OC-3 (155M bit/sec) services from Synchronous Optical Network (SONET) rings to users. The product line delivers data services at speeds between T-I and T-3 as well as between T-3 and OC-3, making it easier for users to buy just the bandwidth they need. Atmosphere was founded last May and is backed by $5.3 million in funding from Benchmark Capital and Institutional Venture Partners. Most of Atmosphere's top management spent time at Switched Multimegabit Data Service pioneer QPSX Communications, Inc.

ATMOSPHERE NETWORKS

Paving the road to true QoS

■ Digex, Inc., Intermedia Communications Co.'s Internet service provider division, has announced NetScanner, the first in a series of software tools that will let users monitor their dedicated Internet access services. Once a Digex Business Connectivity Internet access customer has a logon and password, issued by Digex, the customer can go to the ISP's NetScanner Web site to view statistics on Internet links. The software tool lets users draft hourly, weekly, monthly and yearly charts about their Internet usage.

By April, Digex plans to roll out the second version of NetScanner, which will give users a view into Digex's end-to-end network. While company officials would not detail exactly what the software will monitor, they did indicate the package will include quality-of-service guarantees based on the new monitoring features.

Sniffing Usenet

■ Network Associates, Inc. last week introduced NewsSniffer software that scans Usenet newsgroup messages for virus-infected files. NewsSniffer looks through the more than 27,000 current Usenet newsgroups and protects them by detecting new viruses before they can spread. Many newsgroups now use Web-based front ends, which makes the groups more accessible to the general public as well as to viruses, the company said. The package is free and available now.

✆ Network Associates: (408) 988-3832

Bay to ship Gigabit Ethernet switches

■ Bay Networks, Inc. this week will announce the shipment of its Accelar 1000 line of routing switches. The line includes the Accelar 1100 for workgroups and the Accelar 1200 and 1250 for high-performance workgroup, wiring closet and network center applications. The switches are priced from $624 per 10M/100M bit/sec Ethernet port to $2,750 for a Gigabit Ethernet port. The Accelar line is made up of the Rapid City Gigabit Ethernet switches acquired last year by Bay. Separately, Bay this week is expected to announce advanced reporting capabilities for its Optivity management software, as well as a Fast Ethernet LAN probe.

Better late than never

■ Sun Microsystems, Inc. last week acknowledged it had ported its new Unix software, Solaris 2.6, to all its servers except the high-end Starfire Enterprise 10000 box. A Sun spokesperson said that delay occurred because the company still is testing the software. Solaris 2.6 will be ported to the I0000 by March, the spokesperson said.

Users expect Netscape to rebound

By Andy Eddy
Mountain View, Calif.

Netscape Communications Corp.'s announcement last week that it will post a multimillion dollar loss for the fourth quarter shocked the industry, but customers are not panicking.

They said Netscape's life will not get easier any time soon but that the company can take steps to rebound this year. Customers also said the browser king needs to start offering its browser for free, bolster its service and support organization, work even more closely with vendor partners and continue to improve its enterprise software line.

"If Netscape thinks it's been difficult the past six months, this is just the beginning. It's going to be very difficult in light of Windows NT 5.0 and what Microsoft [Corp.] is building into its operating system, its office automation applications and its development tools," said Neil Fox, manager of advanced development and applied technology for TRW, Inc., in Cleveland.

Users were encouraged by Netscape CEO Jim Barksdale's statement last week that Netscape might start giving its browser to customers for free. Barksdale said competition from Microsoft may force the move.

"[Netscape] can sell more servers by giving away the clients," Fox said.

While it could be argued that Netscape has spread itself thin trying to offer a broad product line matching Microsoft's and Lotus Development Corp.'s, most customers said they have come to rely on Netscape for more than browsers.

Customers applauded Netscape's recent acquisitions of enterprise Web server vendor Kiva Software Corp. and electronic commerce vendor Actra Business Systems LLC, even though costs associated with the acquisitions will contribute to Netscape's fourth-quarter loss. The company estimated the loss to be as much as $89 million.

"Netscape has full ownership of some very powerful products. SuiteSpot is an excellent package, and that's available not only on Unix but Windows NT," said Chris Jennewein, vice president of technology and operations for Knight Ridder New Media, Inc., in San Jose, Calif.

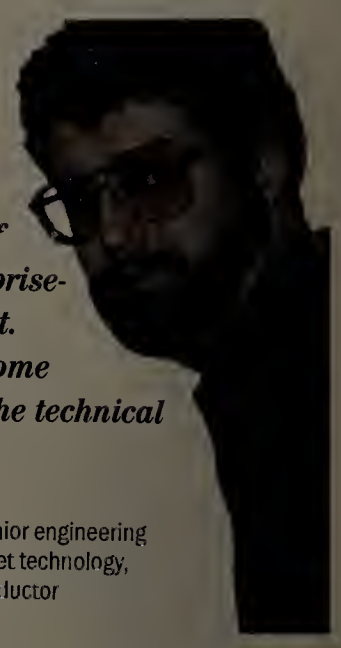
However, others said Netscape may need to develop a better focus for its future.

"Netscape needs to think about how many products it wants to introduce over a time period and the speed [with which it delivers] revisions," said Roger Walters, chief information officer with Booz, Allen & Hamilton, Inc., in McLean, Va.

Customers said they hope Netscape continues to work closely with partners to ensure Netscape products work well with third-party offerings.

"Oracle is our standard data-

See **Netscape,** *page 10*



"Netscape has a way to go to beef up its enterprise-level support. We've had some glitches in the technical support..."

Glenn Newell, senior engineering manager of intranet technology, National Semiconductor

Dissecting Netscape's dilemma

Q&A Wondering why Netscape Communications Corp. expects to post a multimillion dollar loss for its just completed fourth quarter? Here is our take on what happened and what it means to customers.

What happened to Netscape?

Netscape has hit some bumps in its transition from being mainly a browser company to becoming a vendor of enterprisewide products, such as messaging software and directory servers. Additionally, Netscape's expenses have been high, and the company has been hiring aggressively. Competition with Microsoft Corp. in the Web software market also took its toll on Netscape financially.

Are these long-term problems or just a stumble along Netscape's growth path?

It doesn't appear Netscape will be unprofitable for a lengthy stretch. Customers interviewed last week said they are counting on Netscape for much more than browsers, so if the company sticks with its enterprise strategy, business should come Netscape's way. Barksdale leads an experienced management team that should not be shaken easily.

Will the drop in Netscape's stock price make the company an easy takeover target?

Netscape's weakened finances could expose the company as a takeover target. Frank Gens, senior vice president of research for International Data Corp., has predicted that Netscape and Oracle Corp. will merge. Given that Oracle and Netscape share the same key rival in Microsoft and already work together, such a merger could make sense.

Why would Netscape consider giving away its browser if the product is bringing in revenue?

Pursuing the browser market, especially in competition against Microsoft and its free product Internet Explorer, is difficult, if not impossible. The money lost in browser sales by Netscape would likely be offset by the boost in market share and exposure. At the same time, Netscape can focus on sales of its Communicator package and SuiteSpot server suite to enterprises, which likely will be more lucrative in the long term.

Can Netscape succeed in moving from a browser-driven business to enterprise software?

It's a tough road, but Netscape has a respected lineup of products that are feature-filled and span different operating systems. The addition of Kiva Software Corp. products fills out Netscape's product line that much more. Pricing, however, is a big factor. Netscape's competitors can better withstand the impact of a price war.

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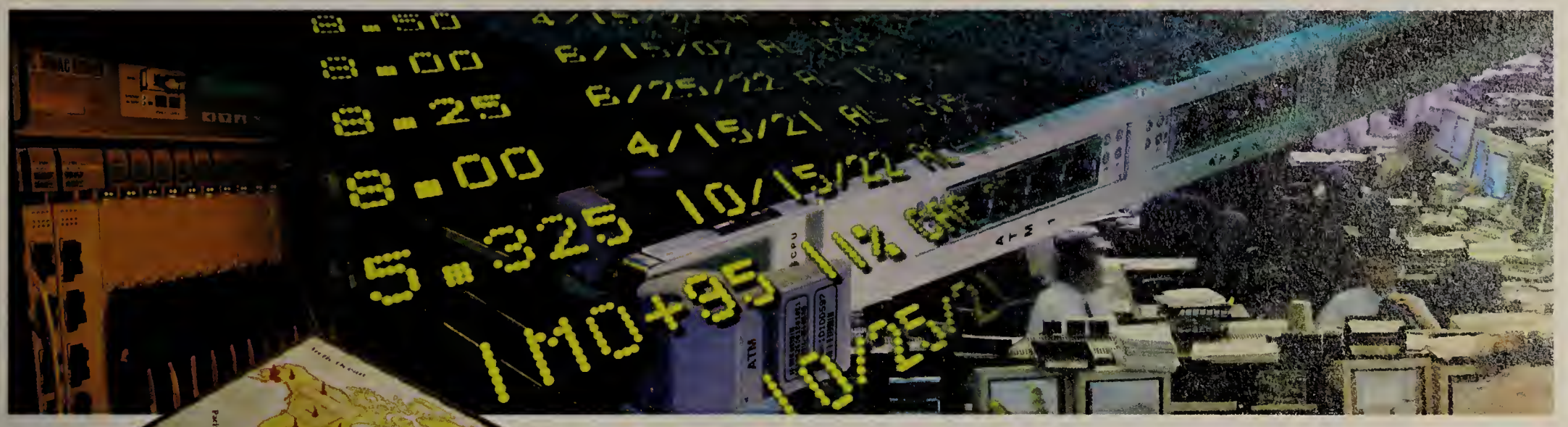

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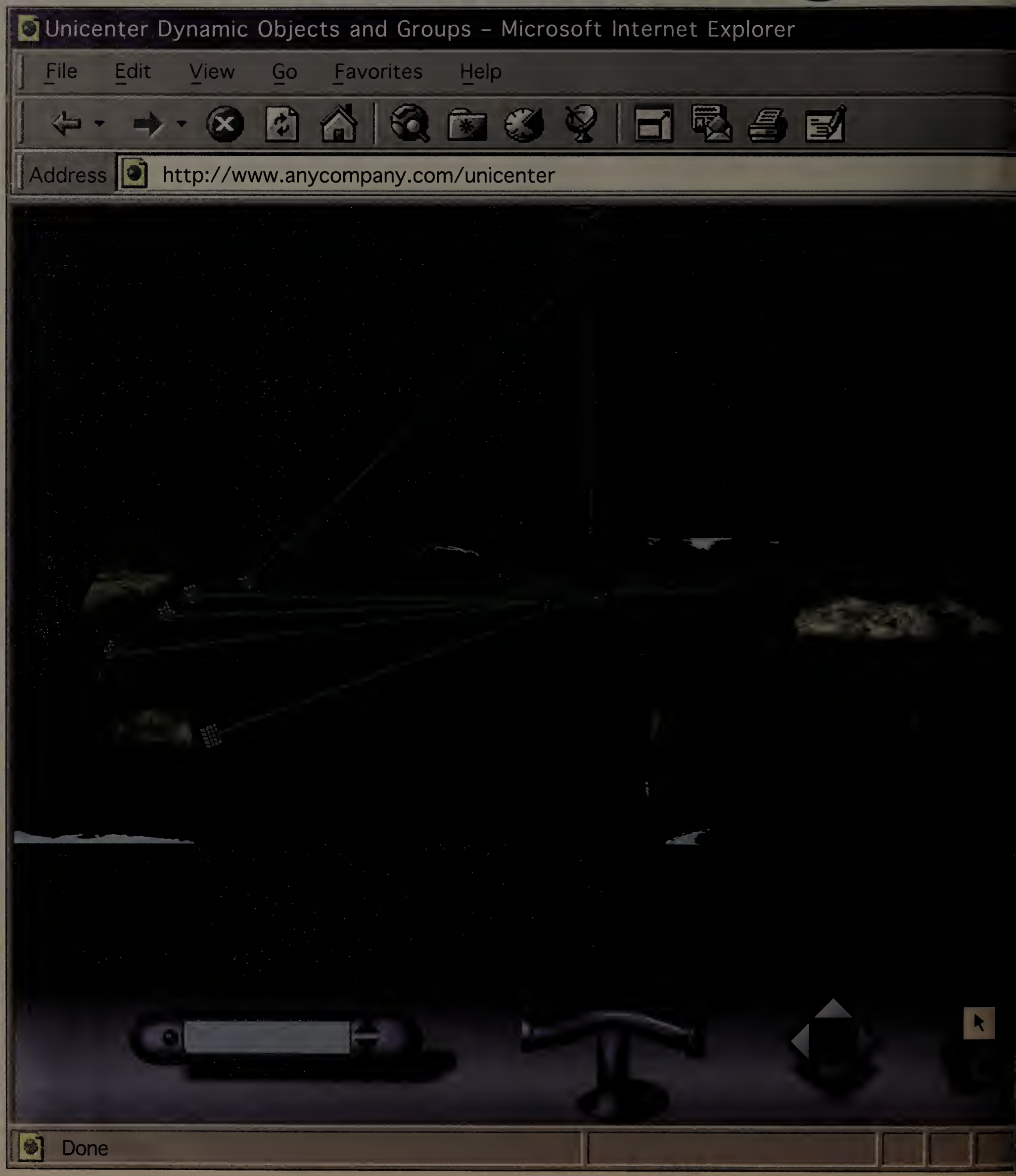
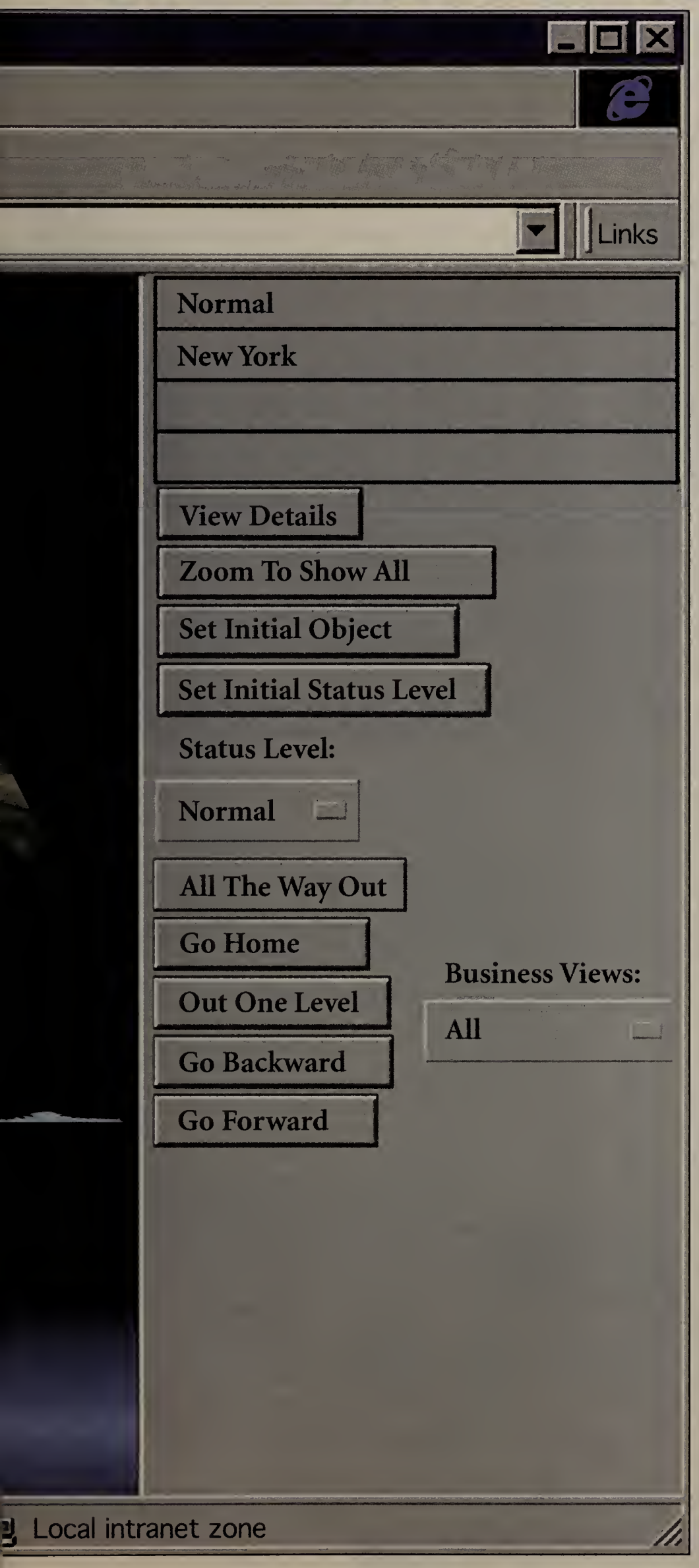


e World With A Browser.



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New kids on the long-distance block

Qwest, IXC and Williams race to erase national capacity shortage with vast new nets.

By David Rohde

If the Great Bandwidth Crunch of 1997 is long forgotten by the end of this year, it will be thanks to three little-known companies hustling to build the nation's first new national telecom networks in a decade.

A race is under way among Qwest Communications International, Inc., IXC Communications, Inc. and Williams Communications Group to complete networks along their unique railroad, pipeline and microwave rights of way.

With tens of thousands of new circuit miles about to become available, the three companies could end the nationwide bandwidth shortage that caused big carriers to repeatedly raise T-1, T-3 and high-speed frame relay port prices last year.

The three long-distance newbies, stocked mostly with former top executives from AT&T and WorldCom, Inc., each have different strategies for delivering the benefits of their vast new bandwidth to users. And analysts caution that it could be a while before the new carriers' billing and customer service systems catch up to those of their more established brethren.

But for bulk point-to-point bandwidth, the new carriers are determined to be players. "Today there is still an extreme fiber and capacity shortage," said Dave Thomas, IXC's executive vice president for business operations. "As soon as you can get [fiber and capacity] into the marketplace, it will be absorbed."

Already about a hundred corporations, as well as carriers and Internet service providers, have signed up for circuits with IXC, despite the company's low profile. And Qwest President Joe Nacchio, a former top AT&T executive, has been pitching his company's planned IP, fast-packet and point-to-point services, emphasizing Qwest's lack of existing, costly to maintain non-Synchronous Optical Network (SONET) architectures.

"[Nacchio] will be able to deliver his products at a cost far less than anyone else in the market because he doesn't have all that overhead," said Ronald West, immediate past president of the Communications Managers Association and manager of telecommunications at New York law firm Shearman & Sterling.

Guaranteed dollars

To get up and running, the new carriers have taken a methodical approach. In the past, many new local carriers have built metropolitan fiber rings on spec, taking financial hits up front while hoping to sign up customers once the rings were operational. In contrast, the new long-distance carriers have presold their capacity in gigantic chunks to second-tier retail operators and ISPs.

For example, IXC last February sold 3,100 route miles of capacity from Chicago to Los Angeles to LCI International, Inc. for a cool $100 million. In October, it added a deal with LCI for 1,925 miles of cable from Washington, D.C. to Dallas. In addition, Internet provider PSINet, Inc. agreed to buy 10,000 OC-48 route fiber miles in exchange for PSINet stock valued at $240 million.

Williams, a unit of The Williams Cos. gas-pipeline company that sold its WilTel network to WorldCom three years ago, last week leapt back into the telecom market with an announcement that it was offering capacity to US WEST, Inc. and Intermedia Communications, Inc.

For its part, Qwest last year got commitments from GTE Corp. and Frontier Corp., then inked a $260 million deal with Apex Global Internet Services, Inc., a Dearborn, Mich.-based ISP.

But like all new entrants into the long-distance market, the new carriers face a daunting hurdle: Many users are locked into long-term contracts with the Big Three carriers. To build a user base, Qwest and IXC have signed agreements to buy various regional long-distance companies. But most of those deals give the new carriers little leverage in enterprise networks because the purchased companies have few if any switches and concentrate on traditional circuit-switched voice. That is why Qwest is devoted to developing its own user services. Qwest recently announced a phone-to-phone voice service over its native IP network, charging a flat 7.5 cents per minute. The service begins Feb. 1 for customers in nine western cities, with service in 25 cities planned by midyear. Virtual private network, IP fax and other data services will follow.

Though its sales efforts so far have focused squarely on resellers, IXC is moving to offer its own business services as well. The IXC network can support frame relay and ATM user-to-network interfaces. Last month, IXC inked a deal to link its frame net with Infonet Services Corp.'s global frame overlay network via network-to-network interfaces in New York and Los Angeles. For its part, Williams plans to act principally as a carrier's carrier and not compete with its own customers for users' business.

Senior Writer Denise Pappalardo contributed to this story.

WHOSE NETWORK WILL WIN THE MOST CUSTOMERS?

	IXC COMMUNICATIONS, INC.	QWEST COMMUNICATIONS INTERNATIONAL, INC.	WILLIAMS COMMUNICATIONS GROUP
Headquarters:	Austin, Texas	Denver, Colorado	Tulsa, Oklahoma
Founded:	1994	1988 as SP Telecom	1995
CEO:	Benjamin Scott, formerly of AT&T	Joseph Nacchio, formerly of AT&T	Howard Janzen, formerly of WorldCom
Revenues*:	$285 million, up from $130.3 million in the comparable period in 1996	$490.3 million, up from $129.8 million in the comparable period in 1996	$3.14 billion, up from $2.57 billion in the comparable period in 1996
Business:	Nationwide wholesale telecommunications provider	Long-haul fiber capacity	Communications services, including a fiber-optic network
Number of route miles:	14,000	3,350	11,000
Goal:	More than 15,000 route miles by the end of 1999	16,000 route miles by the second quarter of 1999	18,000 route miles by the beginning of 1999
Major assets:	Microwave and new fiber builds	Railroad rights of way	Oil and gas pipelines

*For nine months ended Sept. 30, 1997

** Revenues listed are from the parent firm, The Williams Companies, Inc., for the nine months ended Sept. 30, 1997.

Netscape

Continued from page 6

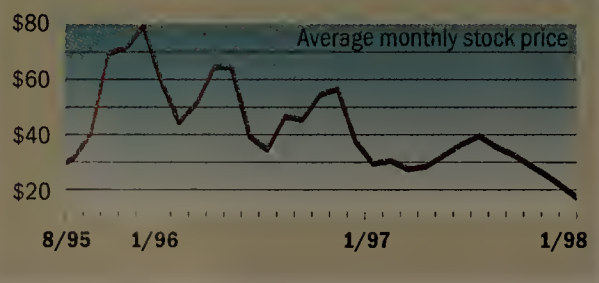
base, so if we're doing a Web interface to a database application, it might be done in [Netscape's] LiveWire or via the Oracle Web Server," said Dale Maine, manager of Internet services at Hamilton Standard, a division of United Technologies Corp., in Windsor Locks, Conn. "Netscape products interface well with Oracle's."

Perhaps the biggest area in which customers want to see improvement from Netscape is its service and support. Most customers interviewed thought the solution to the problem would be adding more bodies, though that might be unlikely given that Barksdale last week said the company is planning layoffs.

"Netscape has a way to go to beef up its enterprise-level support," said Glenn Newell, senior engineering manager of intranet technology at National Semiconductor Corp. in Santa Clara, Calif. "We've had some glitches in the technical support, and we've been trying to set up some consulting services that have taken some time to get ironed out."

Sandy Sully, chief information officer for Xilinx, Inc., of San Jose, Calif., agreed that Netscape's response time could improve, but she noted that Netscape is not the only software supplier with customer support shortcomings. "Technical support is one of the hardest areas to keep staffed," she said. ■

NETSCAPE'S ERRATIC STOCK PRICES



Bay makes investment in voice-over-IP mart

By Jim Duffy
Santa Clara, Calif.

Bay Networks, Inc. last week planted a stake in the nascent voice-over-IP market with a $37.6 million investment in NetSpeak Corp., a maker of IP telephony technology.

The investment underwrites an OEM and joint development arrangement between the companies and gives Bay a 9% ownership of NetSpeak, according to Bay officials. Bay and NetSpeak will jointly develop voice- and fax-over-IP products for enterprise customers and service providers.

Bay *CEO David House says voice-over-IP technology will save customers money.*

"Initially, the compelling value proposition for our customers is straight cost savings as they move long-distance traffic from traditional services to IP networks," said David House, chairman, president and CEO of Bay. "The more important part of our strategy is to focus on value-added applications that result from the consolidation of voice, video and data over one network."

Under the terms of the agreement, Bay will integrate NetSpeak's voice and fax technologies into BayStack remote access products and routers, enabling those devices to convert voice and fax traffic into IP packets. Bay will unveil these products by mid-year.

Additionally, Bay is now reselling NetSpeak's IP telephony server software, which supports services such as e-mail-to-IP address lookup, call routing, credit processing and event management.

Rival Cisco Systems, Inc. also is aggressively pursuing the voice-over-IP market.

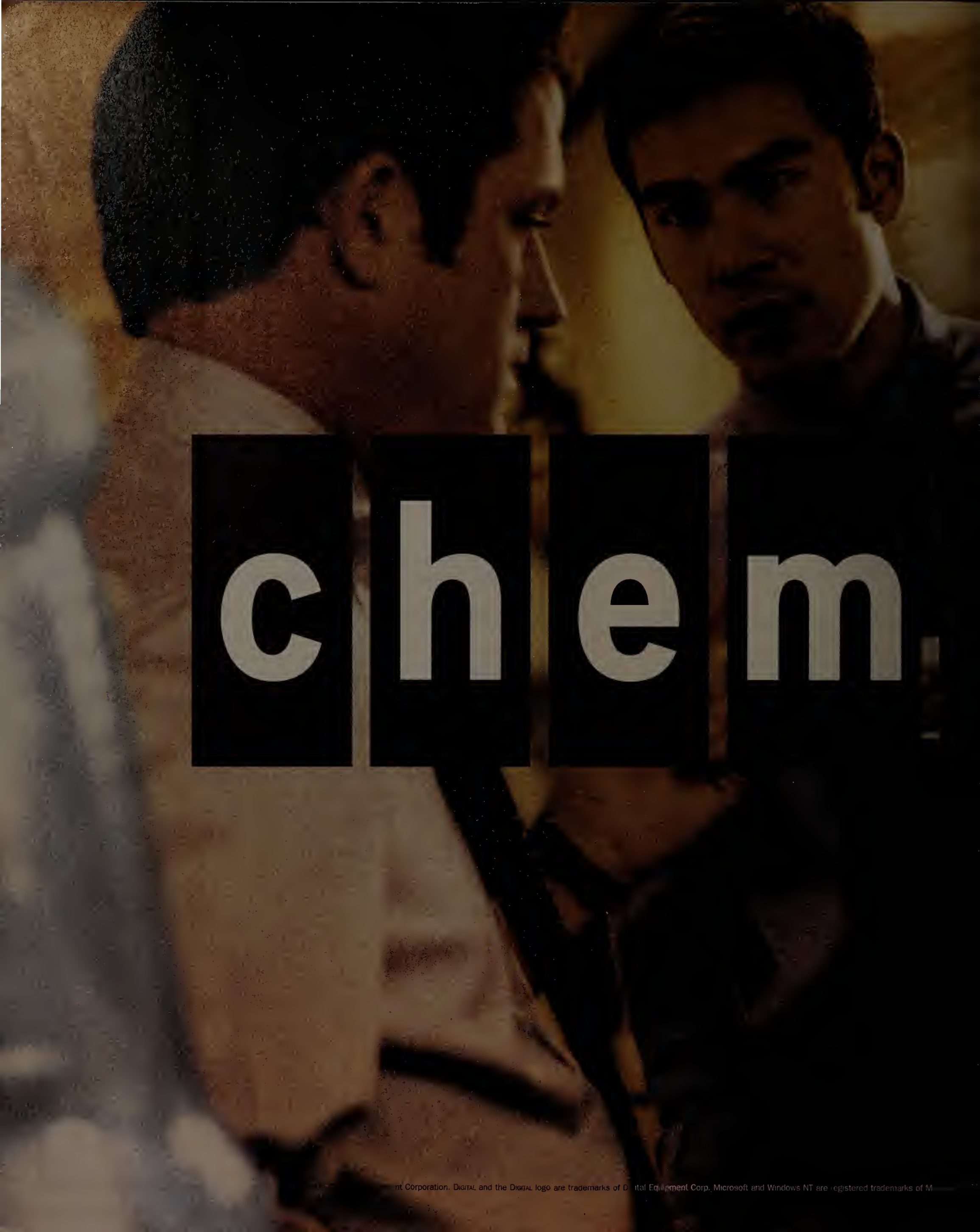
Analysts said Bay picked a leading provider of voice-over-IP technology in NetSpeak, which was founded in 1995 and is based in Boca Raton, Fla. According to market researcher Pulver.com, Inc. of Melville, N.Y., the worldwide market for voice-over-IP equipment will grow from $140 million in 1997 to $2.5 billion in 2002.

"This puts Bay ahead of the pack," said Dan Taylor, director of global telecommunications research at Aberdeen Group, Inc. in Boston. "A lot of what we've seen for voice-over-IP has been separate, free-standing gateways running on a PC platform [that] don't really integrate into the existing switching infrastructure. Voice-over-IP functionality [will be] available to existing Bay customers merely as upgrades."

Bay's challenge will be to build market awareness and communicate a business case for this technology, Taylor said.

Bay is not alone. Rival Cisco Systems, Inc. also is aggressively pursuing the voice-over-IP market (*NW*, Jan. 27, 1997, page 1). Cisco recently acquired LightSpeed International, Inc., a Sterling, Va., developer of voice signaling technology that can be used in PBX gateways and voice-over-IP products for service providers.

Cisco also announced circuit emulation modules for its LightStream 1010 ATM switch and 7200 series router and a voice/fax card for its 3600 series router. Cisco is expected to disclose more of its voice/data integration strategy at ComNet '98 in two weeks. ■



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ALLIANCE

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Cisco unveils 10M/100M switch line

Catalyst 2900 Series XL devices priced at less than $300 per port.

By Jim Duffy
San Jose, Calif.

Cisco Systems, Inc. last week announced a line of autosensing 10/100 Fast Ethernet desktop switches with various port densities and configuration options.

The new Catalyst 2900 Series XL line is aimed at businesses looking to aggregate smaller Ethernet and Fast Ethernet LANs and servers, and provide dedicated 10M/100M-bit/sec bandwidth to desktops. Analysts said the switches, at less than $300 per port, are priced to stay competitive with Bay Networks, Inc.'s BayStack 350 and 3Com Corp.'s SuperStack II 3000 lines.

"When the Bay 350 came out, [Bay] really kicked [butt]," said John Armstrong, principal network analyst at Dataquest, Inc. in San Jose, Calif. "Bay probably locked horns with Cisco in a lot of accounts and Cisco didn't win. So [Cisco] went back to the drawing board and formulated these new switch products, which pretty much line up with the 350s."

The Catalyst 2900 Series XL includes four switch models and two expansion modules. The switches boast a 3.2G-bit/sec switching fabric and a 3 million packet/sec forwarding rate, Cisco claimed.

Cisco's existing Catalyst 2901 and 2926 10/100 switches are based on the Catalyst 5000 architecture, which does not lend itself to sub-$250-per-port pricing, said Bill Rossi, director of product management for Cisco's Small Internetworks unit.

Cisco's Catalyst 2900 Series XL *switches are based on a different architecture than the company's existing 2900 line.*

The Catalyst 2900 Series XL line includes the eight-port 2908 XL; the 16-port 2916M XL; and the 24-port 2924 XL and 2924C XL switches. The 2924C XL switch offers 22 10Base-T/100Base-TX ports and two 100Base-FX ports.

The expansion modules for the 2916M XL include a four-port 10Base-T/100Base-TX switch module and a two-port 100Base-FX switch module.

The 2908 XL and 2916M XL cost $2,295 and $3,995, respectively. Both are available now. The four-port expansion module costs $995, while the two-port card costs $1,495. They are also available now.

The 2924 and 2924C are priced at $3,995 and $4,995, respectively. They will ship in March.

✆ Cisco: (408) 526-4000

Damocles

Continued from page 1

ber of such situations were brought to his attention, including potentially deadly ones at a chemical plant, an airline and a maker of medical devices.

The frustrated individual then turns to Project Damocles (posted two weeks ago at www.year2000.com/y2kdamocles.html) and fills out a form detailing the failure, including product names, model numbers and the results of any tests conducted. The identity of informants will be kept confidential.

Project Damocles will forward the information via registered mail to the legal department of the offending party, along with notice that the report will be kept on file until after the year 2000 tolls.

The intent, de Jager said, is to prompt corrective action and/or public disclosure.

After the millennium, should a forewarned party be sued for damages caused by its neglect, its Damocles file would be made available to plaintiffs' attorneys.

De Jager stresses he isn't out to sue anyone himself and has no intention of letting lawyers troll through the Damocles files. However, those reports *will* be stored there, a sword hanging over corporate heads.

While the threat is unmistakable, de Jager is hopeful the notices will be perceived more like this: "Folks, here is information that we know about; now act like a good corporate citizen."

His own lawyers advised de Jager against this undertaking because they fear *he* might get sued. Moreover, another attorney who specializes in Year 2000 issues envisions a different downside for the project.

"There is no question that many companies have not disclosed the true extent of their Year 2000 problems and the effects on their financial position and operations over the next five years," said Steven Hock, an attorney with Thelin, Marrin, Johnson & Bridges in San Francisco.

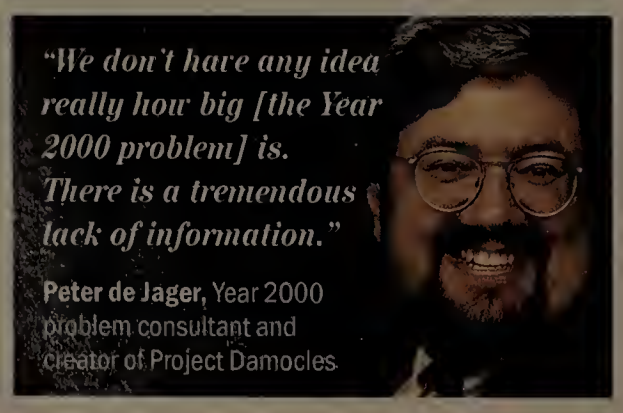
However, Hock also sees negative consequences arising. "[De Jager's] approach will smoke out some legitimate cases of concealment," he said, "but it will also lead to many unfounded complaints, which, when called to the attention of the companies in question, will cause them to spend untold hours and dollars dealing with frivolous accusations, speculation and b.s."■

Wielding 'the sword'

Project Damocles offers whistle-blowers a forum for reporting serious Year 2000 problems they believe are being covered up. Here's what to do:

1. Assemble test data or other evidence of a Year 2000 problem that is going unaddressed.
2. Visit the Project Damocles Web site: www.year2000.com/y2kdamocles.html.
3. Fill out a report form, including model numbers and test results.

Project Damocles will notify the vendor and keep the report on file pending any future litigation.



Start-up switches usher in "open" routing platforms

By Jim Duffy
San Jose, Calif.

Start-up Berkeley Networks, Inc. last week unveiled a Windows NT-based routing switch that the company claims provides access to a range of distributed network services from multiple vendors.

Berkeley's Exponent switches combine the Windows NT Server network operating system, including Microsoft Corp.'s routing and remote access services, with a switching platform that can process 70 million packet/sec and provide 48G bit/sec of full-duplex bandwidth.

The company's first two products, to ship in March, are the e8, an enterprise backbone switch with 48 Gigabit Ethernet or 384 Fast Ethernet ports, and the e4, a modular stackable switch with 24 Gigabit Ethernet ports or 192 Fast Ethernet ports.

By embedding Windows NT Server into the switching platform, the Exponent switches will be able to leverage thousands of network service applications — such as routing, bridging and IP addressing — written by independent vendors. Typically, routing platforms are based on proprietary operating systems and only run service software developed by the router vendor.

Berkeley thinks its NT strategy will reduce cost and complexity for the end user.

"Our whole focus is about creating intelligent networks that can optimize the delivery of mission-critical applications," said Donal Byrne, vice president of marketing and product management at Berkeley. "To do that, you've got to get the network to speak the same language as the applications."

"They are correctly anticipating a further convergence of routing and computing," said Michael Speyer, program manager at The Yankee Group, of Boston.

Integration with Windows NT Active Directory Services allows the Berkeley switches to obtain default configuration data, class-of-service policies and access privileges. This enables autoconfiguration of network resources, setting of differentiated service levels and specification of security policies.

Fully populated Exponent switches are priced at $3,500 per Gigabit Ethernet port and $600 per Fast Ethernet port.

✆ Berkeley: (408) 325-0330

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AT&T

Continued from page 1

Already the RBOCs were threatening to enter the long-distance market quickly via a court ruling on New Year's Eve that threw out — at least for some of them — the requirement that they comply with a local competitive checklist before entering the long-distance business.

And three days before AT&T announced its deal for TCG, SBC Communications, Inc. further encroached on AT&T's territory by announcing it was buying Southern New England Telecommunications Corp. (SNET), the dominant local carrier in Connecticut that entered the long-distance market two years ago.

Given that the AT&T/TCG deal is not expected to close until late this year, users will have to wait to see benefits. But AT&T and TCG officials said while the sale is pending, they would try to accelerate the migration of AT&T users' local access lines from RBOCs to TCG.

"The underlying theme of this transaction is that AT&T is investing for growth," said AT&T Chairman and CEO C. Michael Armstrong. "We have every intention of being a fully integrated global telecommunications provider."

Armstrong emphasized the move would allow TCG to reach business customers via a direct, facilities-based connection. That stood in stark contrast to former AT&T CEO Robert Allen's emphasis on reselling RBOC and GTE Corp. local exchange lines, a strategy that essentially ended in November when AT&T ceased marketing resold lines.

PROFILE: SOUTHERN NEW ENGLAND TELECOMMUNICATIONS CORP.

Headquarters: New Haven, Conn.

1996 revenues: $1.9 billion

Service offerings: Local and long-distance phone service in Connecticut; wireless service in Connecticut, Rhode Island and western Massachusetts

Access lines: 2.26 million

While Armstrong's strategy is much more expensive than Allen's, it could have been even more costly for the long-distance giant. AT&T negotiators apparently won TCG's agreement not to demand more than TCG's value in the stock market, which soared in 1997 to nearly $60 a share.

And taking a page from WorldCom, Inc. CEO Bernard Ebbers' playbook, AT&T offered its own stock in payment. It was able to do so because of a sharp rise in AT&T's stock since Armstrong assumed control in November. Wall Street appeared to applaud the deal.

The AT&T/TCG merger lines up favorably with the pending MCI Communications Corp./WorldCom merger. Both now will have comparable alternative local fiber facilities in major cities, plus a vast long-distance network (*NW*, Dec. 22, 1997, page 8).

But some users saw an even greater potential benefit in the AT&T deal. The MCI/WorldCom combo reduces by one the number of carriers that users can play off against each other to negotiate the best rates, noted Ronald West, immediate past president of the Communications Managers Association. But the AT&T deal leaves in place the carrier and route diversity between TCG and an RBOC that many users seek in large cities without eliminating a long-haul carrier from the scene.

TCG users such as West, who is manager of telecommunications for the New York law firm of Shearman & Sterling, said they may find dramatically quicker provisioning for local and long-distance service under the merger. That is because once a TCG connection to a building is in place, TCG provisions new channels in software within two hours, rather than the RBOCs' traditional week to a month, West said.

The AT&T/TCG deal overshadowed another telecom industry merger announcement earlier in the week when super-RBOC SBC put up a $4.4 billion bid for SNET.

The SBC/SNET marriage could give SBC access to the same long-distance market it has been coveting in numerous court proceedings but has been denied so far by the Federal Communications Commission. ■

Ruling lets RBOCs target long-distance business

By Tim Greene and David Rohde

If a recent federal ruling sticks, it will become a lot easier for your local phone company to become your long-distance company, too.

Regional Bell operating companies will no longer have to jump through hoops for the Federal Communications Commission before selling long-distance service in their home regions — a potential market of more than $60 billion.

That would cut out a time-consuming step and grease the way for faster entry into long distance — good news for RBOCs and for the customers looking for lower long-distance rates, according to Robert Rosenberg, president of Insight Research Corp. in Parsippany, N.J.

"Then the RBOCs are going to pull out their party hats and noisemakers" and engage in "a bloody price war in long distance," Rosenberg said.

The formidable experience and deep pockets RBOCs can bring to bear on the established long-distance carriers should not only drive down prices but also streamline the purchase of telecom services.

All of this was made possible by a federal judge in Wichita Falls, Texas, who recently ruled that the Telecommunications Act of 1996 unconstitutionally discriminates against RBOCs (see graphic). By striking down the law, the judge said RBOCs do not have to meet strict FCC rules on entering the market, making the process much easier.

While the ruling initially applied only to SBC Communications, Inc. and US WEST, Inc., the decision also now applies to Bell Atlantic Corp., at Bell Atlantic's request.

So far, Michigan, Oklahoma and South Carolina public utilities commissions (PUC) have okayed RBOCs to get into long distance, and in each case, the FCC has blocked approval.

Will the nation's judicial machinery turn fast enough for the RBOCs?

On Dec. 31, 1997, U.S. District Court Judge Joe Kendall ruled on a motion by SBC, US WEST, and Bell Atlantic that RBOCs do not have to meet strict FCC rules before entering the long-distance market.

If an appeals court grants a stay:

- The case will be heard this spring by the U.S. Court of Appeals, which will render its decision by early summer. Losers will appeal to the Supreme Court. If the Supreme Court takes the case, the court would render its decision in spring 1999.

If an appeals court does not grant a stay:

- SBC, US WEST and Bell Atlantic will file tariffs and long-distance facility authorizations with the FCC. The carriers will be in the long-distance market by late winter.
- Ameritech and BellSouth will apply for permission to enter the long-distance market under the FCC's rules, but will cite Kendall's ruling or seek similar rulings from other judges. Exactly when they will enter the market is uncertain.

The Wichita Falls ruling could be overturned by higher courts, but last week SBC took the decision at face value and acted on it. Without benefit of FCC approval, SBC filed a tariff to provide long-distance service in Oklahoma — a move that could make SBC a long-haul carrier in that state within 20 days.

US WEST said that based on the ruling it planned to start offering long distance in its region within 30 to 45 days.

BellSouth, while not directly affected by the ruling, plans to use it in arguments to overturn an FCC ruling that shot down BellSouth's attempt to sell long-distance service in South Carolina, a spokesman said.

If the Wichita Falls decision carries the day for the South Carolina appeal, BellSouth's entry into long distance will be accelerated, the spokesman said.

Theoretically, at least, all five RBOCs could forge ahead at SBC's Oklahoma pace, but the other RBOCs are being more conservative. Spokesmen for the companies said they planned to stick with their plans to win PUC and FCC approval state-by-state.

That is due to uncertainty about whether the Wichita Falls decision will stand. If an RBOC gets PUC and FCC approval, the carrier is free to offer long-distance service, regardless of how the court case turns out. ■

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Form: 9702

1 What is the principal business activity at your location? (check one only)

01. ☐ Manufacturing (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Health Care Services
05. ☐ Hospitality/Entertainment/Recreation
06. ☐ Media/TV/Cable/Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities
10. ☐ Education
11. ☐ Process Industries (Mining/Construction/ Petroleum Refining/Agriculture/Forestry)
12. ☐ Government (Federal/State/Local)
13. ☐ Military
14. ☐ Aerospace
15. ☐ Consulting (Independent)*
16. ☐ Carriers/Interconnects
17. ☐ Internet Service Provider (ISP)
18. ☐ Manufacturing (Computer/Communications/OEM)
19. ☐ Resellers of Computer/Network Products (VARs, VADs)
20. ☐ Systems/Network Integrators*
21. ☐ Distributors (Computer/Communications)*
22. ☐ Other *(please specify)*_____

Please complete form based on largest client.

2 What is your job function? (check one only)

NETWORK IS MANAGEMENT:

1. ☐ Network Management
2. ☐ LAN Management
3. ☐ Datacom/Telecom Management
4. ☐ IS, IT, MIS, CIO, Systems Management
5. ☐ Internet/Intranet Management/Webmaster
6. ☐ Engineering Management
7. ☐ Corporate Management (CEO, Pres., VP, Dir., Mgr., Financial Management)
8. ☐ Consultant (Independent)
9. ☐ Other *(please specify)*_____

3 What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of? (Please **print** the appropriate **number code** in the box next to each product category. Please complete ALL categories A-M.)

1. $50 Million or more
2. $25 Million to $49.9 Million
3. $10 to $24.9 Million
4. $1 to $9.9 Million
5. $100,000 to $999,999
6. $50,000 to $99,999
7. Under $50,000
8. None of the above

A ☐ Large Systems *(Mainframes/Minis)*
B ☐ Desktops *(Micros/Laptops/Workstations)*
C ☐ Servers
D ☐ LANs
E ☐ WAN Equipment
F ☐ Carrier Services
G ☐ Internetworking
H ☐ Internet
I ☐ Intranet
J ☐ Remote Access
K ☐ Peripherals
L ☐ Software
M ☐ Service/Support

4 What is the total number of sites for which you have purchase influence? (check one only)

1. ☐ 100+ 2. ☐ 50 - 99 3. ☐ 20 - 49 4. ☐ 10 - 19 5. ☐ 2 - 9 6. ☐ 1 7. ☐ None

5 What is the total number of Servers/Clients/LANs installed/planned at your location/in your entire organization? (Check one box in each column)

	SERVERS		CLIENTS		LANS	
	At Location A	Entire Org. B	At Location C	Entire Org. D	At Location E	Entire Org. F
1.	50,000+		50,000+		50,000+	
2.	10,000 to 49,999		10,000 to 49,999		10,000 to 49,999	
3.	1,000 to 9,999		1,000 to 9,999		1,000 to 9,999	
4.	100 to 999		100 to 999		100 to 999	
5.	50 to 99		50 to 99		50 to 99	
6.	10 to 49		10 to 49		10 to 49	
7.	1 to 9		1 to 9		1 to 9	
8.	none		none		none	

6 What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check one only)
1. ☐ Corporate/Enterprise
2. ☐ Department
3. ☐ None

B. Involvement (check ALL that apply)
1. ☐ Create Network Strategy
2. ☐ Recommend/Specify
3. ☐ Approve
4. ☐ Evaluate
5. ☐ Determine the need
6. ☐ None

7 What is the estimated number of employees at your location/in entire organization? (check one in each section)

A. At your location:
1. ☐ Over 20,000
2. ☐ 10,000 - 19,999
3. ☐ 5,000 - 9,999
4. ☐ 2,500 - 4,999
5. ☐ 1,000 - 2,499
6. ☐ 500 - 999
7. ☐ 499 or less

B. Entire organization:
1. ☐ Over 20,000
2. ☐ 10,000 - 19,999
3. ☐ 5,000 - 9,999
4. ☐ 2,500 - 4,999
5. ☐ 1,000 - 2,499
6. ☐ 500 - 999
7. ☐ 499 or less

8 Please indicate the products/services that you are currently involved in purchasing or plan to purchase: (Check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

INTERNET/INTRANET

A	B	
☐ 01.	☐	Internet Services
☐ 02.	☐	Firewalls/Security/Encryption
☐ 03.	☐	Internet Web Servers
☐ 04.	☐	Intranet Web Servers
☐ 05.	☐	TCP/IP Software
☐ 06.	☐	Management/Monitoring Software
☐ 07.	☐	Push Technology
☐ 08.	☐	Web Browsers
☐ 09.	☐	Intranet Applications/Groupware
☐ 10.	☐	Search/Retrieval Products (web crawler)
☐ 11.	☐	Internet Development Tools (JAVA, ActiveX, etc.)
☐ 12.	☐	Electronic Commerce Tools
☐ 13.	☐	Internet Telephony

LOCAL-AREA NETWORKS

A	B	
☐ 14.	☐	Local-Area Networks
☐ 15	☐	Network Operating System Software
☐ 16.	☐	Servers
☐ 17.	☐	Print Servers
☐ 18.	☐	ATM Switches
☐ 19.	☐	Token-Ring Switches
☐ 20.	☐	Ethernet Switches
☐ 21.	☐	Fast Ethernet
☐ 22.	☐	Gigabit Ethernet
☐ 23.	☐	IP Switches
☐ 24.	☐	LAN Storage/Backup
☐ 25.	☐	Optical LAN Storage/Backup
☐ 26.	☐	Disk LAN Storage/Backup
☐ 27.	☐	Tape LAN Storage/Backup
☐ 28.	☐	RAID LAN Storage/Backup
☐ 29.	☐	Network Test/Diagnostic Tools
☐ 30.	☐	Cables, Connectors, Baluns
☐ 31.	☐	UPS
☐ 32.	☐	Network Interface Cards
☐ 33.	☐	SNMP Network Management

INTERNETWORKING

A	B	
☐ 34.	☐	Routers
☐ 35.	☐	Hubs
☐ 36.	☐	Intelligent Hubs
☐ 37.	☐	Stackable Hubs
☐ 38.	☐	Bridge/Router
☐ 39.	☐	Bridges
☐ 40.	☐	Gateways
☐ 41.	☐	Concentrators/Repeaters

COMPUTERS/PERIPHERALS

A	B	
☐ 42.	☐	Network Computers
☐ 43	☐	Laptops/Notebooks/Sub-Notebooks
☐ 44.	☐	Micros/PCs
☐ 45.	☐	Minis
☐ 46.	☐	Mainframes
☐ 47.	☐	Workstations
☐ 48.	☐	Printers/Network Printers
☐ 49.	☐	CD-ROM
☐ 50.	☐	Fax/Modem Boards
☐ 51.	☐	Graphics/Multimedia/Audio/Video Boards
☐ 52.	☐	Memory/Chips/Boards/Cards

REMOTE/WIRELESS COMPUTING

A	B	
☐ 53.	☐	Remote Access Products
☐ 54.	☐	Remote Access Services
☐ 55.	☐	PDAs
☐ 56.	☐	PCMCIA Devices
☐ 57.	☐	Wireless Data Services
☐ 58.	☐	Wireless Data Equipment
☐ 59.	☐	Cellular Equipment & Services

SOFTWARE/APPLICATIONS

A	B	
☐ 60.	☐	Network Management
☐ 61.	☐	Systems Management
☐ 62.	☐	Security
☐ 63.	☐	Communications Software
☐ 64.	☐	Terminal Emulation
☐ 65.	☐	Operating Systems
☐ 66.	☐	Applications Development Tools
☐ 67.	☐	Database Management/RDBMS
☐ 68.	☐	Groupware
☐ 69.	☐	Workflow
☐ 70.	☐	EDI
☐ 71.	☐	E-mail
☐ 72.	☐	Desktop Video Conferencing
☐ 73.	☐	Imaging
☐ 74.	☐	Suites/Server Suites (Back Office, etc.)
☐ 75.	☐	Middleware
☐ 76.	☐	Document Management
☐ 77.	☐	Site Metering Tools
☐ 78.	☐	Computer Telephony Integration (CTI)
☐ 79.	☐	Data Warehousing

WIDE-AREA NETWORK EQUIPMENT & SERVICES

A	B	
☐ 80.	☐	Modems
☐ 81.	☐	Asynchronous Transfer Mode (ATM)
☐ 82.	☐	Frame Relay Equipment/Services
☐ 83.	☐	ISDN Equipment & Services
☐ 84.	☐	FT-1/T-1/T-3 Multiplexers/Services
☐ 85.	☐	DSL Services/Products
☐ 86.	☐	SONET
☐ 87.	☐	Inverse Multiplexers
☐ 88.	☐	SMDS
☐ 89.	☐	Diagnostic/Test Equipment
☐ 90.	☐	DSU/CSU
☐ 91.	☐	VSAT/Satellite
☐ 92.	☐	PBXs
☐ 93.	☐	Voice Mail/Response
☐ 94.	☐	Videoconferencing
☐ 95.	☐	Leased Lines
☐ 96.	☐	Switched Data
☐ 97.	☐	Virtual Networks
☐ 98.	☐	Outsourcing/Systems Integration Services
☐ 99.	☐	Education/Training Services

☐ 00. ☐ None of the above (1 - 99)

9 Please indicate the platforms that are currently installed/planned:

(Check ALL that apply) A. Currently installed B. Planned for purchase

NETWORK PROTOCOLS

A	B	
☐ 01.	☐	TCP/IP
☐ 02.	☐	IPv6
☐ 03.	☐	SNA
☐ 04.	☐	DECnet
☐ 05.	☐	Novell IPX/SPX
☐ 06.	☐	APPC/APPN/LU 6.2
☐ 07.	☐	NETBIOS
☐ 08.	☐	AppleTalk
☐ 09.	☐	NFS
☐ 10.	☐	Other *(please specify)*_____

LAN ENVIRONMENT

A	B	
☐ 11.	☐	Gigabit Ethernet
☐ 12.	☐	Switched Ethernet
☐ 13.	☐	Fast Ethernet (100 Megabit Ethernet)
☐ 14.	☐	Ethernet
☐ 15.	☐	ATM
☐ 16.	☐	Token Ring/Token Ring Switching
☐ 17.	☐	IP Switching
☐ 18.	☐	FDDI
☐ 19.	☐	100Base-T
☐ 20.	☐	10Base-T
☐ 21.	☐	LocalTalk
☐ 22.	☐	Fibre Channel
☐ 23.	☐	100vg Any LAN
☐ 24.	☐	Other *(please specify)*_____

NETWORK OPERATING SYSTEM

A	B	
☐ 25.	☐	Windows NT
☐ 26.	☐	Windows NT/Advanced Server
☐ 27.	☐	Novell IntranetWare
☐ 28.	☐	Novell (NetWare 4.X)
☐ 29.	☐	Novell (NetWare 2.X, 3.X)
☐ 30.	☐	Microsoft (LAN Manager)
☐ 31.	☐	LocalTalk (AppleTalk)
☐ 32.	☐	Banyan (VINES)
☐ 33.	☐	IBM (LAN Server)
☐ 34.	☐	Artisoft (LANtastic)
☐ 35.	☐	Other *(please specify)*_____

COMPUTER OPERATING SYSTEM

A	B	
☐ 36.	☐	NT Server
☐ 37.	☐	NT Workstation
☐ 38.	☐	Unix/Xenix/AIX
☐ 39.	☐	Solaris
☐ 40.	☐	Windows
☐ 41.	☐	Windows 95
☐ 42.	☐	Windows 97
☐ 43.	☐	DOS
☐ 44.	☐	OS/2/OS/2 Warp
☐ 45.	☐	IBM MVS/VM/VSE
☐ 46.	☐	Digital VMS
☐ 47.	☐	Macintosh
☐ 48.	☐	Other *(please specify)*_____

☐ 49. ☐ None of the above (1-48)

10 Which of the following Servers/Clients do you have installed/planned at your location? (check ALL that apply in each column)

		A. Servers	B. Clients			A. Servers	B. Clients
01.	Power PC	☐	☐	07.	486	☐	☐
02.	Power Mac	☐	☐	08.	386	☐	☐
03.	Mac Other	☐	☐	09.	286	☐	☐
04.	Multiprocessor Servers	☐	☐	10.	Risc	☐	☐
05.	P6/PII	☐	☐	11.	Alpha	☐	☐
06.	Pentium/Pentium Pro	☐	☐	12.	Other	☐	☐

11 Which of the following hardware platforms are installed/planned in your company? (check ALL that apply)

A - Mainframes (Large Scale) Installed/Planned
1. ☐ IBM
2. ☐ Amdahl
3. ☐ Cray
4. ☐ Hitachi
5. ☐ Unisys
6. ☐ Other _____

B - Minis (Midrange) Installed/Planned
1. ☐ IBM RS6000
2. ☐ IBM AS400
3. ☐ Digital
4. ☐ Tandem
5. ☐ Unisys
6. ☐ AT&T GIS
7. ☐ H-P
8. ☐ Data General
9. ☐ Other _____

C - Workstations Installed/Planned
1. ☐ Sun Microsystems
2. ☐ Silicon Graphics
3. ☐ Digital
4. ☐ H-P
5. ☐ IBM
6. ☐ Other _____

12 What is the estimated gross annual revenue of your entire company/ institution? (check one only)

01. ☐ $20 billion or more
02. ☐ $10 billion to $19.9 billion
03. ☐ $1 billion to $9.9 billion
04. ☐ $500 million to $999.9 million
05. ☐ $100 million to $499.9 million
06. ☐ $50 million to $99.9 million
07. ☐ $10 million to $49.9 million
08. ☐ $5 million to $9.9 million
09. ☐ $4.9 million or less
10. ☐ None of the above

13 For which areas outside of North America do you have purchase influence? (check ALL that apply)

1. ☐ Europe 2. ☐ Asia 3. ☐ South America 4. ☐ Australia 5. ☐ Middle East 6. ☐ None

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Briefs

■ **Network Associates, Inc.,** *formerly McAfee Associates, Inc., has dropped a $1 billion defamation and trade libel* **lawsuit** *against antivirus software rival* **Symantec Corp.** *The lawsuit was dropped last week following a federal court judge's denial of Symantec's request for a preliminary injunction against McAfee products, said Richard Hornstein, director of legal affairs for Network Associates.*

"We feel that we've been vindicated, and we would rather try to indicate that we would like some peace with Symantec," Hornstein said.

However, Symantec last week said it still would pursue its lawsuit against Network Associates alleging copyright infringement. Symantec sued McAfee in April 1997, claiming McAfee's PC Medic software contained code identical to that used in Symantec's CrashGuard. McAfee sued Symantec for defamation in August after Symantec issued a statement saying McAfee admitted to using Symantec's code.

McAfee became Network Associates after merging with Network General Corp. in early December 1997.

■ **Digital Equipment Corp.** *and* **Sequent Computer Systems, Inc.** *last week announced a partnership to develop a version of Unix that will run on Intel Corp.'s proposed 64-bit chip architecture, dubbed Merced.*

The software will be based primarily on Digital Unix and will run on Digital's Alpha chips, but also will incorporate Sequent technologies, such as Non-Uniform Memory Access.

The new version of Unix will be capable of running both 64-bit and 32-bit applications, and ultimately will work with Windows NT.

User group chief pushes NT agenda

Windows NT Users Group's Charles Kelly talks about migration, NT 5.0.

Q&A

In just 18 months since its birth, the Worldwide Association of Windows NT Users Group [WANTUG] has ballooned to over 180,000 members in 70 countries. In a recent conversation with *Network World* Senior Editor Christine Burns, WANTUG President Charles Kelly, a recruiter of NT professionals for Wang Laboratories, Inc.'s Network Integration and Consulting Division, talks about the group's past success, its challenges for 1998 and its confidence in NT 5.0.

What is the driving force behind the growth of WANTUG?

The proliferation of NT in the past year is certainly one reason. But as the installed base grew, so did the need for users to band together locally to discuss problems, issues and new technologies. With the small to medium-sized shops there is a strangulation of information factor, in that users find it harder to get attention and support from Microsoft [Corp.].

What are the biggest deployment issues that NT users are facing in 1998?

We are still heavily entrenched in large scale migration issues. Whether companies are moving away from Novell [Inc.'s NetWare] or Banyan [Systems, Inc.'s VINES] they are still dealing with deploying and managing NT as their primary server operating system.

Another reality these companies face when migrating to NT is that there is a real shortage of qualified NT people in the field. As NT gets more geared toward the enterprise, especially as the base OS begins to pick up things like clustering, you really have to know what you are doing to get that up and running.

Our users groups encourage members to become better educated and certified and then to augment that with experience on the job. But that takes time.

Since NT 5.0 is expected to be a complete overhaul of the operating system, what is your membership doing to prepare for these drastic changes?

Microsoft has done a pretty good job of outlining what they have in mind [for NT 5.0]. Things like Active Directory Service hold promise for a big change in ease of use, in that we won't have to fight with those domain issues anymore. And the advances in the distributed object technology will eventually make deploying and running enterprise applications more efficient.

But at the same time, existing users have to grapple with how all of these things will fit into their existing networks without breaking down what they already have and are comfortable with. That's the biggest hurdle to widespread upgrades that Microsoft is going to have to address.

What is the confidence level of your organization that Microsoft can pull off this total revamping of its server operating system?

I think the confidence level is high based on the product's history. We have seen [Microsoft] take a product that in its 3.0 release was difficult to use and make improvements that resulted in widespread adoption.

We think Microsoft can definitely do it. But the confidence level [regarding whether] it will

actually ship this year is pretty low. We don't see that as a huge problem for users because there is still a lot of work to be done to get NT 4.0 networks stable in that time frame. From a profit and a revenue stream viewpoint, I am sure that Microsoft will mind more if the product ships late than its users will.

Will the anticompetitive charges against Microsoft have any effect on how NT gets deployed in the future?

No. Not unless it gets to the point that Microsoft has to pull Internet Explorer out of NT 5.0. That might cause delays in delivery. But other than that, I see the whole case as a matter of competitive angling between Internet Explorer and [Netscape Communications Corp.'s] Navigator which really has no bearing on the server operating system. ■

Go online for:

- Details from a survey showing how NT continues to replace NetWare
- An overview of the key issues facing NT 4.0 administrators
- A look at the Active Directory Services in NT 5.0

www.nwfusion.com 5315

HP slashes hub prices

By Robin Schreier Hohman
Palo Alto, Calif.

Hewlett-Packard Co. last week lowered prices on three unmanaged hubs in response to increasing price pressure in the LAN hub and switch markets.

The company lowered prices between 19% and 46% on its AdvanceStack offerings, which are intended for small offices and branch offices. The devices feature LED readouts that can be used to monitor performance.

HP cut the price of its eight-port 10Base-T Hub-8E to $145 from $179 and the price of its eight-port 100Base-T Hub-8TXE by 46%. "We're trying to maintain — especially [in the 100M bit/sec area] — the price difference between switches and hubs," said Theirry Gonon, an HP product line manager, referring to the big price cut on the 100Base-T hub.

HP also shaved the price of its 16-port 10Base-T Hub-16U to $319 from $419. In September, the company dropped the price on this hub to $419 from $599. The 10Base-T Hub-16U can be upgraded to support SNMP so that the device can be managed in a more sophisticated manner.

HP is responding to price cuts by low-end hub makers such as Accton Technology Corp. and to drastic price cuts in the switch market, Gonon said.

✆HP: (800) 533-1333

HP IS SLASHING PRICES

HP has lowered prices on its low-level unmanaged hub line.

Product	Previous price	New price	% difference
10Base-T Hub-8E	$179	$145	19%
10Base-T Hub-16U	$419	$319	24%
100Base-T Hub-8TXE	$799	$429	46%

WIRED WINDOWS

A guide to Kearns columns for '98

Wondering whether you should tune in to this column for the rest of the year? Here's a guide to help you decide.

Planning is my buzzword for 1998. If you care about planning (and you should), check me out.

One thing I won't mention very much this year is the millennium bug, aka, the Y2K problem. But do expect huge numbers of trees to give up their lives around year-end as every publication picks up on the buzzwords. Just imagine the headlines in *Weekly World News* and *People*!

Right-thinking systems administrators like you have already finished (or are in the process of finishing) your Year 2000 testing and are making plans for the changes you'll need. This year, you can concentrate on being sure that your vendors and clients also have planned sufficiently to overcome any problems. You'll want to be sure that any changes they make won't impact you adversely and that your changes won't upset their plans.

There will be even more legal wrangling this year with suits and countersuits taking up lots of space in your favorite network and computer publications. If it gets to be too much, send mail to Microsoft and Sun saying that you'd like to see Scott McNealy and Bill Gates simply face off on *The People's Court*. I'll try to restrain myself from commenting too much about courtroom activity, but I'm sure I will comment on the topic from time to time.


Dave Kearns

As I said, this year my buzzword will be planning. NetWare 5 and Windows NT 5 are on the horizon, and both bring dramatic changes to the network world. In the coming months, I'll look at the changes to come and nudge you to plan for them in time to take full advantage. In particular, clustering will be important to many sites, but lots of planning will be necessary to use the technology effectively.

The biggest issue in 1998, though, should be directories.

Novell's Novell Directory Services, Zoomit's VIA, Netscape's Directory Server and (maybe) Microsoft's Active Directory are poised to take their shot at becoming the dominant network directory system. Your network is going to become — if possible — even more heterogeneous, accommodating NetWare and NT servers and Unix hosts, each running best-of-breed applications. To keep control in the face of declining administrative budgets you're going to need to move to a single directory management strategy, and that's going to take lots of planning. Start now by gathering all the information you can about the existing directory systems as well as what vendors have planned for the rest of this year. Yes, 1998 will be the Year of the Directory.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

Tip of the week

Novell is in the process of moving its support functions off CompuServe and onto the World Wide Web. Developer support already has moved. (Go to http://developer.novell.com/engsup/ and click on engineering support forums. Note that this is a Java application.) General NetWare support is in beta test at http://support.novell.com/pforum/ but soon will be available via network news at nntp://forums.novell.com/.

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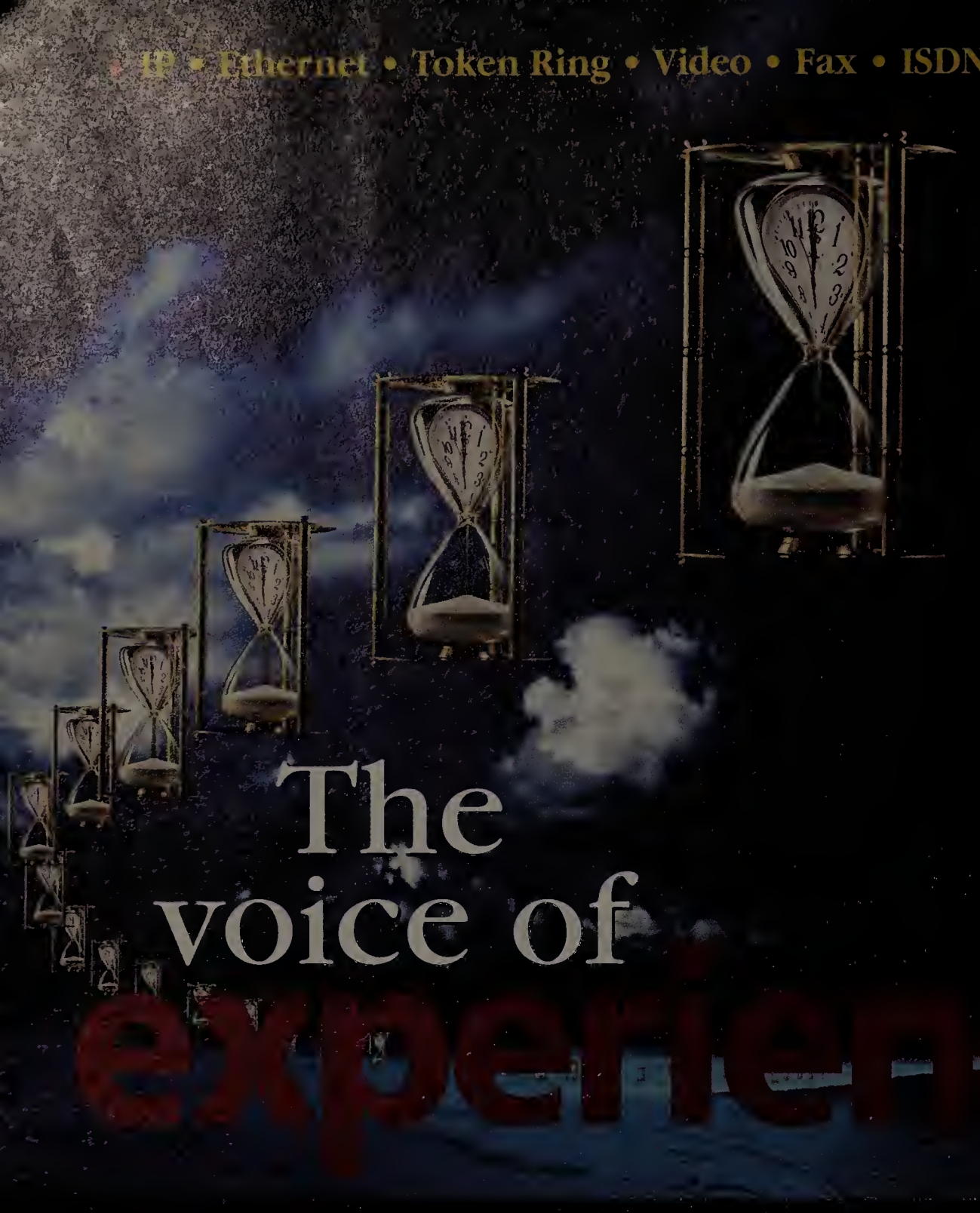

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Briefs

■ **Larscom, Inc.** *last week closed a $35 million deal to acquire ATM access device manufacturer* **NetEdge Systems, Inc.**

NetEdge gives Larscom a line of multiservice ATM access multiplexers, which take in a variety of LAN traffic and drop it onto ATM WAN links. Previously, Larscom focused on access devices for leased-line and frame relay WANs.

■ **Technically Elite, Inc.** *announced that* **Neo Networks, Inc.** *has licensed its MeterWorks Pro Remote Monitoring technology for use in Neo's StreamProcessor line of multigigabit routers.*

Neo Networks' *StreamProcessor*

MeterWorks will enable the StreamProcessor routers to collect 18 groups of RMON2 data on all ports at rates up 2.4G bits per port. This will help users prioritize application traffic based on network usage, Neo said.

StreamProcessor will ship in the second quarter (NW, Nov. 24, 1997, page 28).

© Neo Networks: (612) 979-1200

■ **Onion Peel Solutions, LLC (OPS),** *today announced it has entered a joint software development project with* **Hewlett-Packard Co.**

The contract calls for OPS to create a new product named Amerigo/L2.

Amerigo/L2 will use OPS' Amerigo map engine to manage and dynamically map network devices to its connected port on a Layer 2 device.

Amerigo/L2 is designed to improve the Layer 2 network discovery and topology mapping of HP's OpenView Network Node Manager.

Amerigo/L2 will be marketed, sold and supported by HP and OPS.

© OPS: (919) 571-7910

Avici offers glimpse into its really big router

Company's Terabit Switch Router aimed at bulking up the Internet backbone.

By Jim Duffy
Boxborough, Mass.

Avici Systems, Inc.'s upcoming Terabit Switch Router (TSR) is designed to help service providers scale the Internet well into the next decade.

Avici is building what it claims will be a fault-tolerant router that allows users to build fully meshed networks supporting geometric growth. To that end, Avici's TSR, which will ship in the second half of 1998, will leverage hardware-based routing, forwarding, multicasting and quality of service (QoS) to maintain gigabit line rates.

A TALE OF TERABITS

Avici's Terabit Switch Router features:

- A switch fabric that models the Internet.
- A 70G bit/sec canonical router per line card.
- Hardware-based routing, forwarding, multicasting and QoS.
- Support for wavelength-division multiplexing.
- 200,000 routes per line card, upgradable via SIMMs.

"We're taking what used to be in software and putting it in hardware," said Hank Zannini, Avici founder and vice president of business development. "But we'll differentiate ourselves in building a scalable system. How you build a scalable system is the trick."

Avici is one of several start-up companies building next-generation routers to enable Internet service providers to accommodate exponential growth and deliver value-added services such as QoS and traffic engineering (*NW*, March 17, 1997, page 1).

Avici builds a scalable system by mirroring the Internet, in which service provider backbones are growing by a factor of five per year. To do this, the TSR line cards each will sport a so-called Direct Connect Fabric (DCF) that serves as a 70G bit/sec router on each line card.

The rack-mountable, dual-shelf TSR chassis will include a passive backplane and house 20 line cards. With DCF, every line card added to a TSR increases switching capacity by 60G bit/sec.

The other 10G bit/sec is reserved for shuttling packets from the input port to the fabric, Zannini said.

Line cards will feature four-port OC-12 Synchronous Optical Network (SONET), and single-port OC-48 and OC-192 SONET links. The TSR will support OC-12 ATM access, but on the backbone side it will support frame relay and PPP data links only, Zannini said.

OC-12 and OC-48 line cards will sport 64M bytes of buffer memory, while the OC-192 cards will have 256M-byte queues. Each card will support 200,000 routes, and new routes can be added via SIMMs. A TSR should be able to handle 60 route updates per second, Zannini said.

Today's Internet has less than 50,000 routes, he said.

The TSR line cards also will feature Application Specific Integrated Circuits (ASIC) for packet handling. The ASICs will perform full route table lookup and packet classification in 32 nanosec, and also will handle multicast grouping, scheduling and QoS processing.

For QoS, the TSR will follow the ATM model of delivering constant bit rate, available bit rate and variable bit rate service, Zannini said. Avici will adapt ATM QoS algorithms to work with packets, he said.

In later releases, TSR will feature wavelength division multiplexing (WDM) for transmitting different types of data at distinct optical wavelengths over a single channel. Avici hopes WDM will enable TSR to handle an order-of-magnitude increase in traffic.

Zannini did not disclose pricing for the TSR. ■

3Com and Bus-Tech team for data center connectivity

By Michael Cooney
Burlington, Mass.

Looking to bolster its data center connectivity offerings, 3Com Corp. has agreed to resell Bus-Tech, Inc.'s mainframe channel connectivity wares.

The agreement means users will be able to use Bus-Tech's NetShuttle boxes to attach 3Com CoreBuilder and NetBuilder routers directly to the mainframe without having to use expensive IBM front-end processors, LAN gateways or other SNA controllers.

Bus-Tech's Brandt *is looking to simplify intranet and mainframe connectivity.*

Bus-Tech's seven-member NetShuttle family of mainframe channel connectivity devices lets users tie Ethernet, token-ring and FDDI LANs supporting SNA, TCP/IP and IPX traffic directly to the mainframe.

The scalable family spans the connectivity gamut from the entry-level Model 110, a single Ethernet-to-parallel mainframe channel box, to the top-of-the-line Model 230. The 230 supports two parallel and fiber-based Enterprise Systems Connection mainframe channels, four LAN ports, a tn3270E gateway for SNA connectivity over IP-based nets and a Web server function.

The boxes scale to support as many as 2,000 users and 4,000 SNA or TCP/IP sessions. In addition, all 2XX-level NetShuttles support IBM's Host-on-Demand, a Java-based package that lets 3270 users gain access to SNA applications over the Internet.

The combination of 3Com and NetShuttle products will help users collapse their backbones while at the same time simplifying data center connectivity, said Al Brandt, vice president and general manager of the NetShuttle product line.

According to Chandy Nilakantan, 3Com vice president and general manager, 3Com is aiming to help users preserve their investment in mainframe applications and legacy devices while enabling access to new classes of Web-based users.

"Mainframes now have a dual role as business-critical intranet servers and traditional SNA hosts," said Don Czubek, president of Gen2 Ventures, a consulting firm specializing in SNA and enterprise intranets. "This agreement leverages 3Com's IBM networking capabilities by adding the high-speed mainframe access needed to support this expanding community of mainframe users," Czubek said.

The deal also gives 3Com its first channel-attached devices, which will help it compete in the data center connectivity market with the likes of Cisco Systems, Inc., IBM and Bay Networks, Inc., all of which have their own channel-attached routers and switches.

As part of the agreement, future versions of NetShuttle will integrate 3Com's Gigabit Ethernet and token ring over Ethernet technologies.

Bus-Tech's NetShuttle products are available immediately and are priced from $16,000 to $30,000.

© Bus-Tech: (800) 284-3172; 3Com: (408) 764-5000

INTERNETWORKING MONITOR

Dissecting channel gateway performance

While the notion of linking LANs to mainframes is a decade old, recent developments finally are establishing the mainframe channel-attached gateway as a primary conduit for enterprise computing.

With potentially thousands of simultaneous sessions running across these gateways, network managers are raising legitimate concerns about how well these devices perform under such heavy loads.

Several forces are driving the resurgence of interest in channel gateway technology. First and foremost is the universal recognition of the mainframe as a critical and permanent element of the enterprise computing environment. It is not the dying dinosaur critics once proclaimed it to be.

The rapid and successful integration of TCP/IP into the mainframe environment is another driving force. At the edges, IP-to-SNA gateways — including tn3270 and 3270-to-HTTP translators — empower native IP clients to access mainframes via native SNA. Native implementations of the TCP/IP protocol, as well as implementations of File Transfer Protocol and tn3270 servers on the mainframe's operating system, allow native TCP/IP to flow, end to end, into the heart of the mainframe.

In mid-1997, IBM engaged The Tolly Group to conduct the most extensive independent tests ever using channel gateway technology.

While I viewed this effort more as a first step rather than the last word, the project produced some interesting findings. (Detailed test information is posted on The Tolly Group's Web site; see address below.)

Kevin Tolly

For starters, merely trying to build a controlled, dedicated test environment capable of running enterprise-scale tests was a gargantuan task. Built at the IBM Systems Center in Gaithersburg, Md., the test bed was anchored by a 5-CPU ES/9000 mainframe running MVS/ESA and capable of processing 275 MIPS. The high-end transaction test employed nine front-end processors.

Using a pair of Enterprise Systems Connection (ESCON)b channels to funnel data between the mainframe and channel gateway-attached token-ring LANs, The Tolly Group observed throughput levels that reached 88% of wire speed by downloading batch data over TCP/IP to stations attached to eight LANs. Testing SNA transaction throughput in a similar configuration, rates of some 3,000 transactions per second — sustained — were recorded.

Anomalies abounded, as well. For example, we found SNA session instability and TCP throughput degradation at low load levels. This led the vendor of the gear to state unequivocally that extensive tuning by vendor specialists is required before channel gateways are up to the task of enterprise-scale networking. If true, that is an important finding.

In addition to rerunning the previous benchmarks with new versions of gateways, the next round of testing also should explore critical areas such as simultaneous dual-protocol (SNA and IP) throughput tests and gateway connections to Ethernet/Fast Ethernet LANs.

Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, N.J. He can be reached at (732) 528-3300, or at ktolly@tolly.com or www.tolly.com.

Briefs

■ **Motorola, Inc.** *recently announced the* **sale of Ardis Co.,** *its wireless data service provider, to American Mobile Satellite Corp. for $100 million. The deal is expected to be final by the end of March. Motorola had been looking to sell off Ardis because it did not fit in with the company's primary business of selling telecommunications hardware.*

■ **WorldCom, Inc.'s** *plan to acquire MCI Communications Corp. has hit a* **regulatory speed bump** *overseas. The European Commission's merger task force delayed a final decision on the union pending the receipt of further information from both companies. WorldCom and MCI expect a decision from the European Commission later this month. The Federal Communications Commission is still reviewing the merger agreement.*

■ **Netrix Corp.,** *of Herndon, Va., has announced its* **Vodex Voice Gateway,** *which will let Network Exchange 2210 users support IP voice traffic. The 2210 frame relay switch currently supports voice and fax over frame relay. The new software will let customers extend voice support to their IP connections using a single device. Customers can connect two to 90 voice channels to the 2210.*

The Vodex software is slated for availability by the end of the first quarter. Pricing will be determined at that time.

✆ Netrix: (800) 949-2737

■ **Cincinnati Bell, Inc.** *has snapped up a division of AT&T devoted to servicing* **users' outsourced 800 lines** *and other customer service activities. The company is picking up the division, best known by its former name of AT&T American Transtech, for $625 million. The acquisition means new customers for Cincinnati Bell's 800 outsourcing unit Matrixx Marketing, Inc.*

AT&T WorldNet gets its Internet ducks in a row

Executive from Internet service provider division outlines challenges, goals for 1998.

Q&A

Last year at this time, AT&T WorldNet was floundering. All of its AT&T WorldNet Managed Internet Services (MIS) were provisioned from BBN Planet's (now GTE Internetworking) backbone. And the Internet service provider division was coming up short with other business services.

But the company is righting itself. Today, about half of its MIS users are on AT&T's WorldNet Internet backbone. And the company in the past few months has announced a handful of services that address the business market. These include WorldNet Virtual Private Network service, WorldNet Business Dial service and enhancements to its SecureBuy electronic commerce service.

Network World Senior Writer Denise Pappalardo recently talked with Kathleen Earley, vice president of networked commerce services at AT&T WorldNet, about the company's latest developments and where the ISP is headed.

"IP is front and center [in] this company's future," said Earley, a vice president at AT&T WorldNet.

AT&T WorldNet has gone through a lot of change in the past six months, including migrating existing MIS customers from BBN Planet's backbone to WorldNet's backbone. How is that migration going, and when will all MIS customers be on WorldNet's backbone?

We have over 1,000 customers provisioned on AT&T's backbone for MIS. But more importantly, in November we provisioned over 255 customers onto our own backbone. That number exceeded any month when we were working [exclusively] with BBN. All MIS customers will be on AT&T's backbone by the end of [1998].

AT&T recently rolled out its WorldNet Virtual Private Network service. Why should network managers choose to get their VPN/intranet services from AT&T WorldNet when some other ISPs have been offering these services longer?

We did not announce our service until we had a customer up and running on it. Others who position themselves as our competitors have announced their services at least twice and may still not have any customers up and running.

The integration of our frame relay services is also a benefit to customers. They come to us because they are using our frame relay services, and they can add a dedicated port for Internet access. This lets customers keep appropriate traffic on our private data network and Internet traffic on the Internet network.

AT&T had been active in the electronic commerce service arena in 1997. Many Internet users still have security concerns or simply prefer to shop at a mall. How do you see this changing in 1998?

We have over 7,000 businesses running their Web sites inside our network. The Internet was first a place to publish your information. Now customers are finding out that they can change their costs by providing information and customer services on the Internet rather than just using an 800 toll telephone service. We expect a significant revenue stream from our [electronic commerce services] business.

When you say 7,000 businesses running their Web sites inside your network, do you mean 7,000 Web hosting customers?

Yes. And they represent a transition that is occurring in the industry that started in information publishing. Now we have several hundred people using our SecureBuy service and hundreds [of contracts] on back order.

Customers *are going to buy based on QoS, availability and reliability, not marketing tactics, Earley said.*

For instance, the Muscular Dystrophy Association is a SecureBuy customer. During the Jerry Lewis [MDA Labor Day] Telethon, the group received tens of thousands of donations through their Web site. Now they maintain the site for the entire year.

Does AT&T WorldNet plan on offering IP voice or fax services?

We have an IP voice trial today. AT&T Jens [an AT&T subsidiary] has [since September] been selling calling cards in Japan that carry voice traffic over AT&T Jen's IP network.

What about domestic trials or services?

We have a lot of things in the works for IP fax and voice. We will aggressively go after this market. IP is front and center [in] this company's future.

Are there concerns that these types of services will affect AT&T's other business areas, primarily long distance?

One has to lead in these markets — it's important to your future. I know that my mother is not going to be making any IP voice calls soon, but there are certain market segments where these services fit.

From an Internet standpoint, how do you view the pending WorldCom/MCI merger?

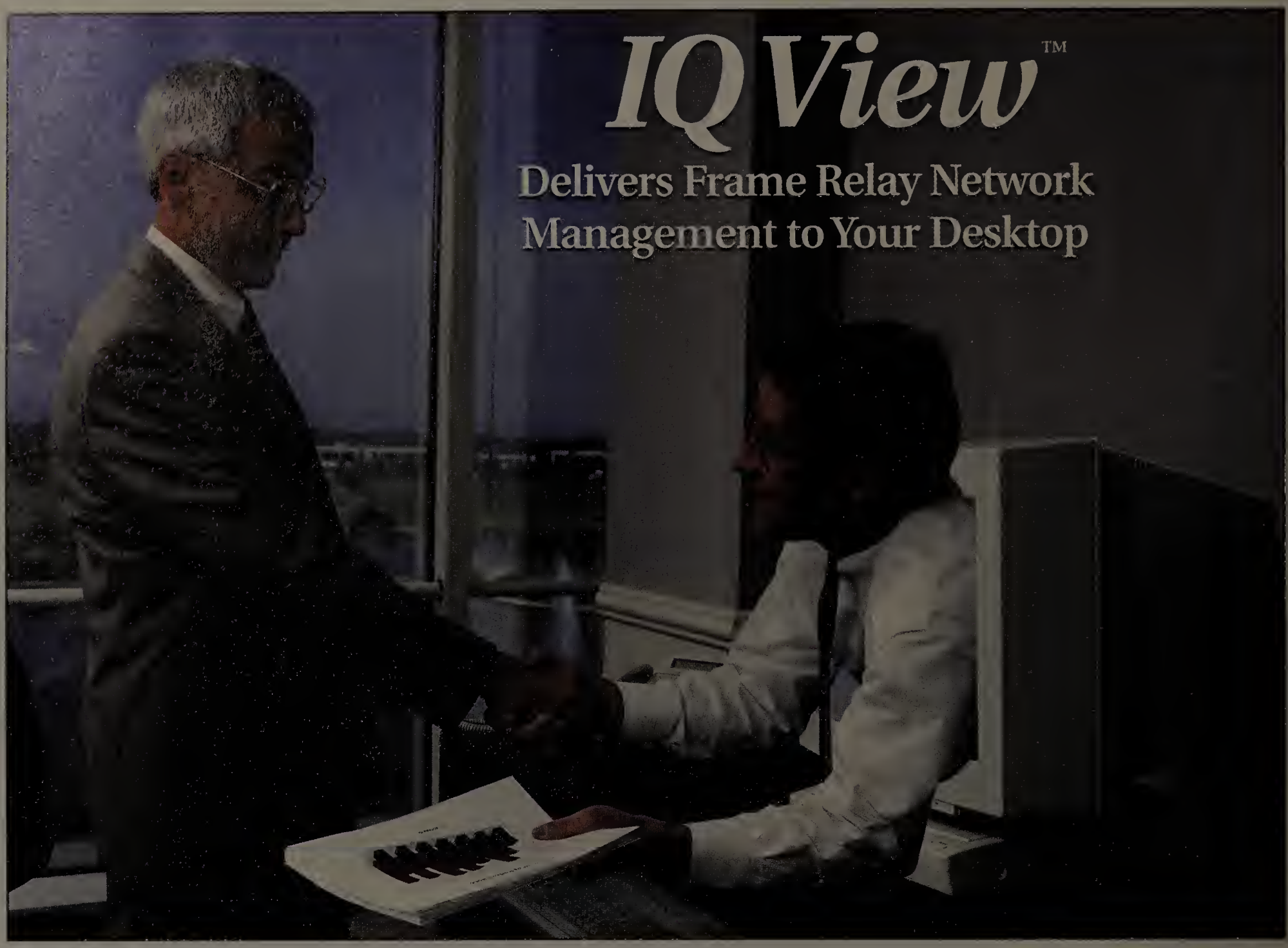
AT&T plans to aggressively compete with WorldCom in Internet services, and we are well positioned to do that. We have a profound footprint in frame relay and private lines that no one can compete with. Mergers and acquisitions are an interesting way of approaching the marketplace.

Does AT&T plan on growing through acquisition?

I can't really comment on that.

Does AT&T believe the merged MCI/WorldCom entity will have any unfair advantages over the rest of the ISP industry?

This is an open and competitive marketplace, and at the end of the day, customers are going to buy based on quality of service, availability and reliability. Marketing tactics will not carry users for very long. ■



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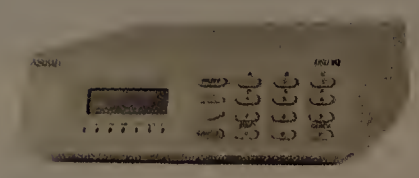

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EYE ON THE CARRIERS

Lawyers in Mr. Armstrong's ear

Suppose you made a New Year's resolution to get in shape and you kept it for the first month — working out and eating better — until you caught a cold on February 1.

Would you get back on the treadmill after you recover? Or would you give up hope and let yourself go for the rest of the year?

That's the decision facing AT&T Chairman and CEO Mike Armstrong following a recent court ruling that seems to undermine the Telecommunications Act of 1996.

A federal district court judge in Wichita Falls, Texas, ruled that the regional Bell operating companies don't have to prove afterall that they've met a strict local competitive checklist before entering the long-distance business.

David Rohde

"Well!" said the lawyers at AT&T. "This means comprehensive telecom competition is impossible! We're going to appeal this baby, and the industry's going to be gridlocked for months or years!"

Are you listening to your lawyers, Mr. Armstrong? Since they say the telecom act's all fouled up now, should you give up your evident desire to slim down the company and finally build or buy local broadband facilities? Or should you turn a deaf ear to your legal eagles and get right back on your shape-up program?

AT&T lawyers always say they're upset by legal setbacks, but they never really seem to be. Often, they seem relieved to be able to point to another excuse not to attack the local market and to be juiced up for yet another courtroom battle. The company's legal vice president, Mark Rosenblum, frequently likes to talk about what legal milestones to look for "over the next few months," as if that's all the industry cares about.

Last week, Rosenblum calmly told reporters and analysts that an appeals court ruling on the Wichita Falls case could take four to seven months, and a Supreme Court appeal could carry over until 1999.

But while AT&T lawyers waltz through "the next few months" thinking that the industry breathlessly awaits the next move by a telecom comisar, the real, demand-driven world of WANs could race right by them.

"Over the next few months," competitive local exchange carriers probably will once again double the number of buildings wired for alternative networks.

"Over the next few months," more municipalities and electric utilities will go into the telecom business for themselves.

And "over the next few months," the new national networks from Williams, IXC and Qwest will continue their build-outs and service introductions.

All of this will take place whether the Wichita Falls ruling is upheld, overturned, stayed, delayed or read backwards by Jerry Seinfeld on his last show.

In the midst of the legal chaos, Armstrong last week said AT&T still is slimming down, looking at acquisitions and prepping a new overall architecture for circuit- and packet-switched traffic. Is it possible Mr. Armstrong secretly believes that the current telecom legal fog makes it *more* important for AT&T to accelerate its broadband and local-market efforts before time runs out for bandwidth-starved users? That really would be new thinking in Basking Ridge.

Rohde is Network World*'s senior editor of Carriers & ISPs. He can be reached at david_rohde@nww.com.*

SPECIAL FOCUS

Telecom reform

Competition coming to the local loop

By Tim Greene

Nearly two years into the Telecommunications Act of 1996, the nation's largest cities are becoming cradles of telephone competition.

Cities such as New York, Chicago and San Francisco already enjoy fresh choices for local telecom services, and more choices are on the way. Indications are that this increasing competition ultimately will offer significant savings for major corporate customers.

The savings will come because upstart telephone companies are muscling into markets by offering cut rates. Their services are similar to those offered by incumbent local exchange carriers (ILEC) but their prices are about 10% less, according to George David, publisher of the Center for Communications Management Information (CCMI), in Rockville, Md.

The price difference will rob ILECs of some of their business, and they will be forced to respond with lower prices, according to Simon Reeves, senior communications analyst with Decision Resources, Inc., in Boston.

Plenty of companies are lining up to challenge the ILECs and force prices down.

Nationwide, more than 60 competitive local exchange carriers (CLEC) have registered with state regulatory commissions. More are in the regulatory pipeline, seeking legal CLEC status that will let them forge interconnection deals with ILECs.

It will take until year-end before enough alternative services are available to cut into ILEC revenues, Reeves says. But the process already has started.

Telecom boutiques

The new wave of competition comes on top of more limited offerings that have been around for years. The alternative carrier market was driven by now well-known service providers such as MFS Communications Company, Inc., which was bought by WorldCom, Inc., and Teleport Communications Group, Inc. (TCG). Those carriers initially specialized in bypassing ILEC networks and have expanded to offer data services as well.

But many of the upstart competitors focus on more limited markets. Much as MFS and TCG did in their infancy, today's newcomers are coming in city by city with just a few offerings.

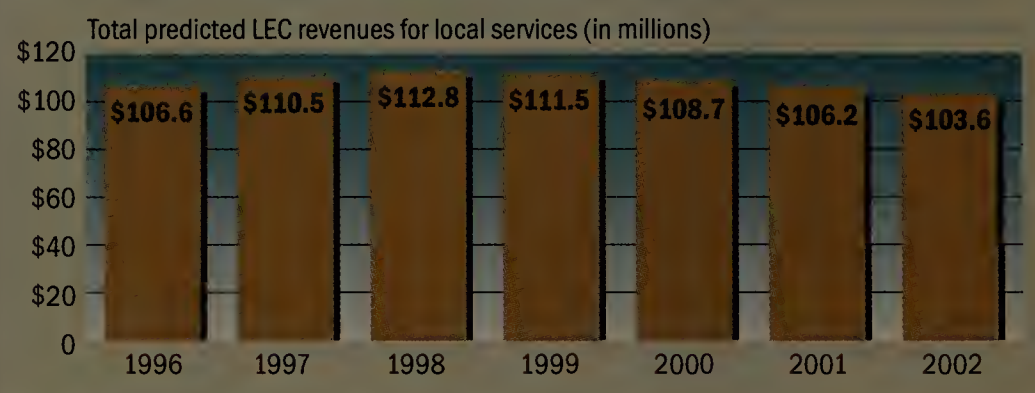
For example, Focal Communications Corp. has set up shop in two cities, New York and Chicago, with plans to be in 10 cities by the end of 1999. It only offers analog and digital dial-up services and only sells to corporate customers.

"That market is small in terms of numbers of customers, but it's large in terms of dollars," says Robert Taylor, Focal president and CEO.

Focal's lower rates and fast service attracted Rob Doell, manager of network services for Gooitech, Inc., a Shaumburg, Ill., wireless electronic commerce firm.

COMPETITION UNDERCUTS LOCAL CARRIERS

As competitors attack the local telephone market, they will skim revenues from the traditional local exchange carriers Ameritech, Bell Atlantic, BellSouth, GTE, SBC and US WEST. Initially, declining revenues will reflect the loss of customers. Later, increased competition will force prices down, adding to the revenue decline.



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Gooitech bought two Primary Rate Interface ISDN lines from Focal as part of an expanding need for dial-up access to its corporate LAN. It saved on per-minute charges and per-month line fees, and there was no installation fee, Doell says.

Focal also is faster to change orders and provide quotes for additional services, he says.

While it was risky to go with a young, unproven company, it was worth it to explore beyond the local ILEC, which is Ameritech Corp., he says.

"It gives you the flexibility to do what you want to do," Doell says. The risk was minimized because the two ISDN lines represented new services and did not affect existing services Gooitech buys from other carriers, he notes.

Other carriers are taking the opposite tack from Focal's. They offer a broad range of services, hoping that customers will be attracted by having their local and long-distance voice services, data services, Internet access and Web hosting supplied by a single vendor.

Allegiance Telecom, Inc., a CLEC based in Dallas, plans to do just that in 24 major cities, according to Royce Holland, president and CEO of Allegiance. He hopes that diversity, not just price, will lure customers. "Being competitive is very important. You don't necessarily have to charge less than the competition, but the more services you can push at a customer over the same wire, the better off you will be," Holland says.

Go where the money is

Allegiance and other CLECs are targeting the largest cities because of the revenue opportunities. "It costs the same to put a switch in New York City as it does in Dayton, Ohio. But you can fit all the market in Dayton into the World Trade Center and still have room left over," Holland says.

As a result, corporations in smaller cities will have fewer choices and will have to wait longer for competition to develop. In some states, no CLECs have filed tariffs, the documents that describe the services phone companies offer, according to Christopher Heiler, a research analyst with CCMI.

Other factors beyond pure economics are slowing the spread of competition. ILECs are not always as cooperative as they might be (*NW*, Dec. 8, 1997, page 1). Some challenge every CLEC application, dragging out the time it takes to win CLEC approval.

In addition, ILECs own the phone wires that run to customers' homes and businesses. Ordering those lines for use by a CLEC can be a nightmare, Holland says.

Take control

Within two years, CLECs will make significant inroads into ILEC local business, meaning that better deals are just around the corner, Reeves says.

Heiler recommends that users sign only short-term telecom agreements, so they can take advantage of lower prices to come. In the meantime, it is worthwhile to try out new carriers on a small scale to gauge the quality of their services.

Many of the new carriers entice customers with talk of lower prices, but the customer should check for hidden fees, he says. For example, a carrier that offers a lower monthly rate might have a higher access charge for long-distance calls or an elevated connection fee.

Customers who want to switch carriers to improve services should look for a competitive carrier that has its own network. Switching to a CLEC that simply resells ILEC services might be less expensive, but the service runs over the same network, so quality will not improve, Heiler says. ■

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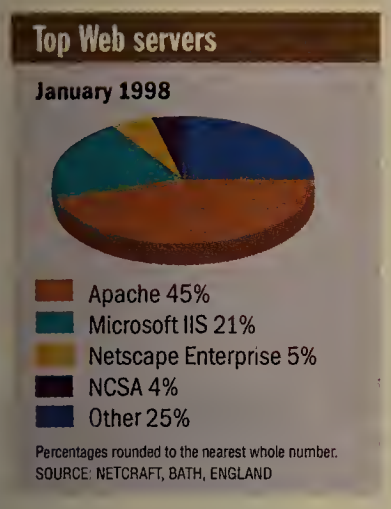
Briefs

■ **The Apache Group's Apache Web Server** *remains the dominant Web server on the Internet, according to a survey by Netcraft, Ltd., of Bath, England. The January survey reported that 45% of the 1.8 million respondents use Apache Web Server. The latest version of the server is Apache Web Server 1.2.4, which runs on most Unix platforms. Version 1.3 is in beta and will run on both Unix and Windows NT.*



■ *The public's appetite for* **free Web-based e-mail** *has grown serious enough to prompt software giant* **Microsoft Corp.,** *of Redmond, Wash., to acquire* **Hotmail Corp.,** *of Sunnyvale, Calif. Microsoft intends to offer free Hotmail accounts to users of The Microsoft Network online communication and information service. A leader in the burgeoning Web-mail marketplace, Hotmail boasts nine million users worldwide. Financial terms of the acquisition were not disclosed.*

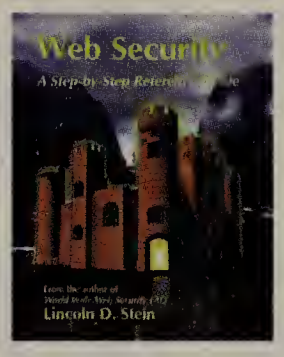
■ *Document management software vendor* **PC Docs Group International, Inc.,** *of Toronto, has announced that it intends to acquire* **Fulcrum Technologies, Inc.,** *of Ottawa, in a stock swap valued at about $20 million. Fulcrum specializes in text-search products. If the deal is completed, Fulcrum shareholders will receive one share of PC Docs stock for every 4.4 shares of Fulcrum that they own.*

Defensive tactics can help users keep Web server hackers at bay

Author's checklist gives security professionals a fighting chance.

By Ellen Messmer

Web servers have become a favorite target for network hackers, but there are steps you can take to minimize your vulnerability to break-ins.



Companies might best protect their networks by isolating public Web servers as much as possible, accepting the fact that each of these servers could be "a sacrificial lamb" to predators on the Web, said Lincoln Stein, director of information systems at biotechnology firm CuraGen Corp.

"No matter who you are, there is probably someone who doesn't like you," said Stein, who has written a new book called *Web Security*, published by Addison Wesley Longman, Inc.

Well-known victims of Web-jackings include Yahoo, Inc., the U.S. Air Force and the Department of Justice.

The book provides a useful list of steps companies can follow to reduce their organization's security risks.

For example, Stein recommends cleaning up buggy Common Gateway Interface scripts or JavaScript code, which can let hackers remotely execute commands or overwrite files on a Web server.

To keep hackers from using a Web server as a springboard to critical internal resources such as databases, companies should keep e-mail and FTP services off the machine running the Web server software.

If a company has the ability to isolate its Web servers, it can place a firewall behind them. At the same time it can run only the most recent versions of Web server software from the likes of Microsoft Corp. and Netscape Communications Corp.

In his book, Stein documents security holes in all of the major commercial and freeware Web servers, noting "some of the holes were discovered within weeks of the time this chapter was written, and the pace of discovery doesn't seem to be slackening."

In any case, one key defensive measure is to turn off every feature not required on a Web server, such as automatic directory listings that make Web servers browsable.

"Don't ever run a server with 'superuser' privileges or root, even if the vendor says it's OK to do that," Stein said.

While the emergence of corporate Web servers has placed yet another burden on systems administrators and security professionals, there is a silver lining. According to a recent survey by SANS Institute, managers with security responsibilities enjoyed a 14.1% pay hike last year because their expertise is sorely needed (see chart). ■

FileNET unveils document management suite

Panagon IDM Desktop is based on ActiveX and other Microsoft technologies.

By Paul McNamara
Costa Mesa, Calif.

FileNET Corp. this week will take the wraps off an integrated document management package designed to replace a mish-mash of related technologies developed internally or acquired over the past three years.

The new client software — dubbed Panagon IDM Desktop — is based on Microsoft Corp.'s Component Object Model, ActiveX and Active Server Page technologies. The FileNET offering gives users a single interface for capturing, retrieving, viewing, updating and routing more than 200 document types.

Panagon IDM Desktop can be deployed on a Windows PC or can be accessed from a thin client via a Web browser that has been enhanced with a free plug-in.

According to users and industry analysts, the long-promised technology is an important one for FileNET. The company made a name for itself as a workflow vendor before acquiring document management firm Saros Corp. in 1996 and imaging company Watermark Software, Inc. the year before.

"It's going to make [deployment] more consistent, user-friendly and functional," said Mitch Ummel, Kansas Department of Health and Environment.

"They are not leapfrogging the competition with [Panagon]," said Nathaniel Palmer, an analyst with Boston-based Delphi Consulting Group. However, the integration of previously distinct applications into a unified desktop will give the company a boost as it attempts to become more of an enterprise player, he added.

"This makes [FileNET] a much stronger contender," Palmer said.

One customer said his organization is pleased with the direction FileNET is taking with Panagon. "It's going to make [deployment] more consistent, user-friendly and functional," said Mitch Ummel, networking services manager at the Kansas Department of Health and Environment, in Topeka. "What I'm hoping to see is that we will be able to do more [enterprise-wide] deployment."

Scheduled to ship by the end of February, Panagon will be available in different versions and cost between $300 and $800 per user. Existing FileNET customers who already are on maintenance contracts will get free upgrades to Panagon.

✆ FileNET: (714) 966-3400

INSIDER

It's not dark yet

In yet another area, technology is outpacing society's ability to understand and deal with its ramifications.

Yes, it is getting easier for technology providers to keep track of their users. Consider these developments of the recent past:

- The cashier at the airport records your license number as you exit, "for inventory purposes."
- Automatic toll-collecting machines keep track of when you pass by so they can provide you with a detailed bill (and someday perhaps a speeding ticket if you take too little time to go from entrance to exit).
- Swisscom, the Swiss telephone company, has records detailing every move that a million of its cellular phone users have made over the past six or more months, accurate to within a few hundred meters.
- A U.S. luxury car manufacturer advertises that with a call to its 24-hour help desk you can get directions from where you are to where you want to go. The company doesn't happen to mention that the car is using satellites to keep track of where it is and can, upon a request via radio, report its location.
- The FCC is requiring all U.S. providers of cellular phone service to be able to accurately report on the location of the origin of any cell phone call to help support 911 emergency call centers.
- *Fortune* magazine reports that NTT in Japan has a prototype system with which the company can report, on request, the location of any cell phone in NTT's system that is turned on, down to the floor of the building the phone is on.
- Many U.S. trucking companies use radio tracking systems to monitor the location of their vehicles.

This all is more Orwellian than Orwell ever was.

Who is the keeper of all this tracking data? In almost all cases it is private industry, a group that has not shown much restraint in exploiting any information it might have on individuals.

Scott Bradner

This is not an area where we should be complacent and trust the good intentions of the business community. Specific and strict legislation should be quickly passed to restrict the distribution of this type of information.

I doubt that Congress would be willing to do the right thing, which is to require that the data be destroyed as soon as the use for which it was obtained has been fulfilled.

The law enforcement people will like the idea of being able to track everyone's movements far too much for that to happen. But they should at least require a search warrant and prohibit all other distribution of the data under threat of large fines and jail time.

Who "needs" to know?

Meanwhile, there is a desire for even more location data. I was at a meeting recently where the "need" to know the physical address of all Internet users was brought up — so that the right locality could tax each user's electronic purchases.

As a balladeer recently sang, "It's not dark yet, but it's getting there." Unfortunately, one does not need eyes all that good to see the darkness approaching.

Disclaimer: Harvard is not immune — it records who enters its parking garages — so the above dim view is my own. (One awareness point if you know who the balladeer is.)

Bradner is a consulant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

GO HOME

It's 2 A.M. Do you know who your family is? Managing a business-critical global network will never be easy.

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800-786-7638 for more information. Then go home. And get some rest. THE NETWORK IS THE COMPUTER.™

ALREADY.

EDITORIAL *insights*

Readers react to hypocrisy charge

My Dec. 22 editorial "Are you a hypocrite?" drew strong reader reaction.

In the piece, I said customers were being hypocritical if they cheered the government antitrust attack on Microsoft yet continued to buy Microsoft products. A network administrator from a Washington university labeled the editorial a "stinking, illogical, delusionary attempt at reason . . .," adding "like much of the tripe I glean from the feather-thin pages of your weekly rag, this irrational crap is consistent across all of your writers."

Another wrote: "This country is funny, going along with something until it becomes just too popular. Then we get scared and suddenly feel the need to bring that company, person, sports team or whatever back down to a level we feel comfortable with. Yea, let's start buying inferior products from companies that do nothing but cry about how big, bad Microsoft is hurting them when they should be paying attention to putting out a better product."

A reader with an IT consulting firm said: "Your editorial was on point. I'm anxious to [hear] from readers who will complain about Microsoft and at the same time justify buying from Microsoft — complaining that it's too hard and too costly to integrate the other technologies. Competition and consumers made the auto industry change, not slick-talking CEOs trying to keep their bonuses, not slicker lawyers representing the CEOs . . ., and not the Justice Department Kids in Black who would like to promote themselves to Men in Black if they can bring the mighty M$ to the ground."

A network admin from Wisconsin opined: "I've despised Microsoft's bullying tactics for a long time, and if I can do my job without a Microsoft operating system or application, then I'll use a competitor's product. I have no sympathy for people who complain yet continue to send their money to Redmond. But I do think . . . the government [should] regulate Microsoft when MS uses its OS monopoly to prevent OEMs from providing software that customers request."

"Your editorial makes some good points, but you miss an important aspect of the criticism [and Justice Department suit] against Microsoft," said another reader from Washington. "Consumers should not be expected to go against their own best interests to protest the marketing policies of a monopolist. If Microsoft leverages its utter dominance of desktop operating systems to crush competitors, that does not mean its products may not be the best choice for certain buyers. I support the attempts to bring Microsoft's practices into compliance with the law because I want the company to flourish based on excellence, not arm-twisting."

To all who wrote, thanks. We'll be running these letters in an upcoming issue and online. I'd love to hear from other readers on this. Can you support the government and still love Microsoft?

John Gallant, editor in chief jgallant@nww.com

Java Break • Ted M. Young

Java in '98: Will it get better or worse?

Last year was a turbulent time for Java as it entered its second full year of public availability. The release of JavaSoft's Java Development Kit (JDK) Version 1.1 in February was followed by five bug fixes. Target release dates for new technologies, announced at the JavaOne conference in April, were missed. Obviously, Java has become larger and harder to predict and control than JavaSoft anticipated.

Is Java getting too big for JavaSoft? The standard APIs in JDK 1.2, which must be part of any Java implementation, are getting broader and more complex as the product approaches its release in the second quarter.

Meanwhile, despite five fixes, JDK 1.1 still has troublesome bugs that force developers to create workarounds. Is JDK 1.2 also going to require three or four bug-fix releases before we can use it to get some real work done? Unfortunately, the answer is yes if JavaSoft continues to worry more about meeting an impossible schedule than ensuring the quality of the release.

Those of us who have to implement Java in our organizations are being overwhelmed by new technologies that are coming too fast and are too unstable. Slowing things down a bit would make everyone happy, especially since we're still training people to make the most of the JDK 1.1 technologies.

It now takes almost two weeks to train a C programmer in Java and the "advanced" Java technologies, such as Remote Method Invocation, Java Database Connectivity and JavaBeans, the Java component architecture. Once JDK 1.2 is released, that time will double, if not triple, because of sizable additions, such as the Java Foundation Classes, a new security model and Enterprise JavaBeans.

We need these new technologies to create useful and easy-to-use distributed applications. But I'd rather see them released a few months later if doing so means they'll work properly, quickly and across different platforms.

Now, let's consider the flip side of the question: Is JavaSoft getting too big for Java? Two recent events show that this may be the case.

First, in November the International Standards Organization approved Sun's bid to become a publicly available specifications (PAS) submitter. This means all proposed changes to the Java standard must go through Sun, which then can decide which ones to forward to the ISO for approval.

Then, in December JavaSoft announced it would sell its HotSpot compiler technology, which enables Java programs to run as fast as C++ programs, as a separate product rather than including it in the core JDK as originally planned.

I have nothing against JavaSoft trying to make money, but this is a bad decision. Most complaints about Java relate to its relative slowness compared with C++, which makes HotSpot a desirable product. However, making users pay for it adds to the cost of deploying Java in the field, which certainly doesn't help Java's cause.

It's also disturbing that JavaSoft's decision seems to have been a complete surprise to everyone, even Java licensees such as IBM. If JavaSoft originally had stated that HotSpot would be an add-on product available at cost, then other vendors might have worked harder to create competitive products.

I don't believe JavaSoft intentionally set out to deceive the Java community about HotSpot. However, in the future JavaSoft would be wise to recognize that, as the Java standard bearer, it has a responsibility to be open about its future plans so other vendors can prepare. Otherwise, developers are going to view Sun as just another bully with a standard that thinks it can do whatever it wants.

If you want to help keep Sun in line, check out the Java Lobby (www.javalobby.org) and the Java Developer's Alliance (www-b.developer.com/jda/) and get involved.

Young is chief technology officer at Advanced Web Technologies Corp., a Java training and mentoring firm in New York. He can be reached at (212) 487-9064 or tyoung@javatrain.com.

Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, *161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.*

Rewriting history

Your review "Power tools for the Web" (Dec. 8, 1997, page 54) disturbs me. The article calls Allaire Corp.'s Cold Fusion 3.0 "more of an InterDev look-alike that still has a little growing up to do." For the record, Cold Fusion existed before Microsoft even realized that it might be convenient to connect to a database over the Web.

Microsoft is notorious for copying whatever it sees and throwing its weigh behind that copied technology. So it might be a surprise to some that Cold Fusion existed before InterDev. Cold Fusion hasn't been plastered on every magazine and catalog by the jugger-

There's more to switched IP than IP switching

IP switching is dead. Nokia bought Ipsilon, the architect of the concept, for a pittance. Can Nokia now redeem the idea? That's about as likely as snow falling in Honolulu.

So forget IP switching — it's D . . . E . . . A . . . D. The question now is whether switched IP will die along with it. I say no, but since Ipsilon's apparent success clearly was a victory of hype and hope over substance, I've got to prove my point.

IP switching was Ipsilon's term. It describes a way to use ATM to build IP networks that map every persistent user IP traffic stream to its own virtual circuit. That's the problem — every flow gets a virtual circuit. The other switched IP strategies from vendors such as Ascend, Cisco and Toshiba don't work that way — and therefore probably won't follow Ipsilon's IP switching into the grave.

The technical problem that IP switching addresses starts with deficiencies in connectionless networking. With router/IP networks of old, all users shared network resources equally and also shared a single address space. Routed IP networks such as the Internet can't exploit increased buyer willingness to pay for services and can't prevent users from freely communicating.

Populism such as this flies in the face of reality: Some users have more money to spend, and some want to communicate only with a select subset of the world's IP population. Service providers are only too happy to take additional user bucks for improved performance and for supporting virtual private networks (VPN) that work like small independent networks inside a public IP network. The fact that buyers are willing to pay for something that providers can't offer creates a major opportunity for some enterprising organization.

Where Ipsilon's IP switching went wrong was in failing to recognize that quality counts in networking to the extent that money can change hands to obtain it. Per-flow virtual circuits would have committed service providers to supply private connections for millions of users who never would have paid for them.

Furthermore, IP switching used the same address management strategy as routers, a uniform public address space. For non-IP users, or for users who adopt RFC 1918 private addresses to gain flexibility in their own networks, Ipsilon had no answer.

Today's virtual circuit networks — particularly frame relay — show that solutions to performance management and address isolation are possible. Almost half of the frame relay services sold in 1997 were focused on building VPNs. Link access routers with frame relay services and you have corporate IP VPNs. The only problem is there is too much per-user cost; buyers report the cost of typical managed frame/router networks as nearly double that of basic frame relay. We need to lower the cost by relying less on the IP device overlay — that is, by bringing IP services into the switched network.

The Internet Engineering Task Force's Multi-protocol Label Switching (MPLS) group is working on this and likely will come up with a solution this year. Submissions from vendors such as Cisco, IBM and Toshiba, all of which are members of the MPLS group, could help restrict the use of virtual circuits to situations subscribers are willing to pay for, such as high-quality Internet access or VPNs. They also could create small, partitioned subnetworks where users could employ any protocols or address conventions they like, regardless of IP uniqueness or compatibility, without risk of collision with other users or security problems.

"Could" is the operative word here. The issue of VPN support isn't paramount with the MPLS group, and apparently it's not paramount with vendors in the switched IP space either.

The first commercial product announced after Ipsilon's IP switching was launched was Ascend's IP Navigator. While Navigator supports partitioned VPNs and specific service quality to customers, users of the ATM switch products which Navigator runs on often are not aware of the features or how to use them. Other vendors with MPLS strategies, such as Cisco, have yet to even field a VPN-compatible product.

Why not? Because of all the Ipsilon hype. We aggrandized the concept of IP switching so much that we forgot to tell people what was useful about it. That let Ipsilon raise capital and operate for two years when there was no chance the company would succeed. It also encouraged all of Ipsilon's competitors to avoid the knotty issues, even though the current MPLS approaches could resolve those issues in a wink.

At least one competitor is likely to be winking furiously, and soon. Larry Lang, a key player in Ipsilon's heady flight and fiery fall, has returned to his former employer, Cisco. It's pretty unlikely that Cisco hired him back to continue his work on IP switching; more likely, Cisco is counting on Lang to apply what he learned from Ipsilon's failure to ensure that Cisco's tag switching succeeds.

That's all it will take to open the MPLS floodgates, since the other vendors in the MPLS working group surely will have to follow Cisco's lead. Some may even try to anticipate a Cisco announcement to get a jump on the market. Either way, MPLS will rise to become the basis for building public IP networks in the 21st century, and IP switching can rest in peace.

Nolle is president of CIMI Corp., a technology assessment firm located in Voorhees, N.J. He can be reached at (609) 753-0004 or at tnolle@cimicorp. com.

naut-fearing media and distributors, so of course nobody has heard of it.

I guess the inevitable has come: An application's usability now is based entirely upon Microsoft's convoluted offerings. The article states: "Visual InterDev has an intuitive and flexible project management facility. Its project window resembles the Windows Explorer tree pane." So, because it works like Windows 95 and FrontPage, we must all hail it?

Maybe Microsoft can integrate all of its applications into its operating system and we won't need to buy software from another company. Why do we need any other companies, anyway? Oh, that's right, Microsoft needs somebody to do its R&D.

William Reeves
President
Logistix Productions, Inc.
Coos Bay, Ore.

Freedom of choice

Regarding your editorial "Back up your words, Microsoft" (Dec. 15, page 44):

If, as you say, customers choose to have "a single, consistent implementation of Java across the industry," then all they need to do is refuse to buy Microsoft's product. I fail to see how having more than one product on the market limits the choice of consumers. If there is a collective will in the industry to remain pure in its implementation of Java, it will happen. If not, then it won't matter if the impurity comes from Microsoft or Joe's Software.

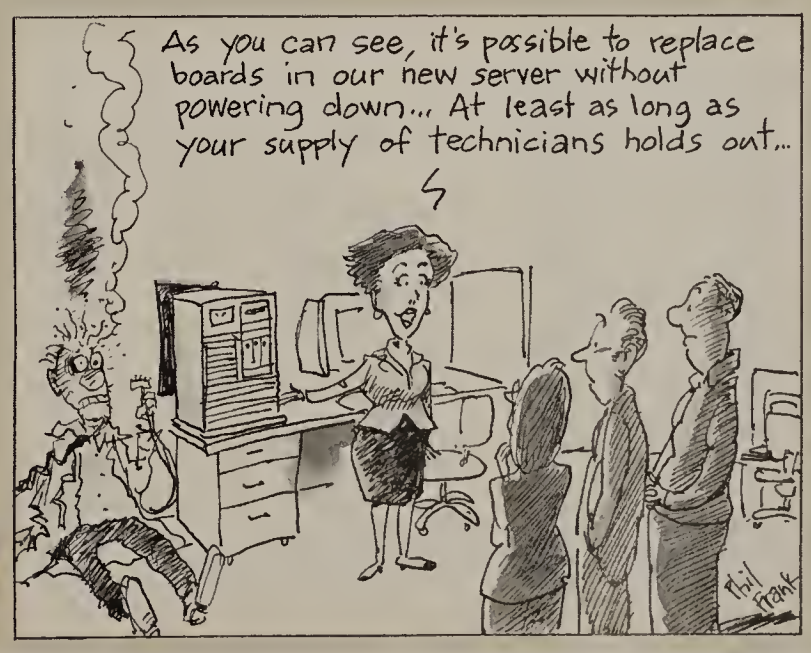
In the early 1980s, C was the language that was going to provide true portability. All you had to do was make sure you wrote ANSI standard code and everything would be fine. By the time I began writing C code in 1985, there were numerous implementations on the market, each with its own library of nonstandard functions. Did I stay pure? No. I chose to use those nonstandard functions that made my job easier. The operative word here is "chose."

Notice that I haven't mentioned the company that produced the compiler and libraries I was using (and it wasn't Microsoft). It doesn't matter. That company provided all the tools I needed to write standard code. I chose not to. Who deserves the blame then for my fall from grace? Certainly not the company that made a fine product which I chose to use in the wrong way.

If Java dies or fragments, it won't be because of different implementations; it will be because developers chose not to be pure.

Pat Finan
Senior analyst
World Wide Travel Service, Inc.
Little Rock, Ark.

Teletoons



NetworkWorld

ComNet '98 Planner

The 20th anniversary ComNet show promises to demonstrate the multitude of leading-edge enterprise network products available today. Whether you are looking to improve the capacity, performance, security or design of your networked environment, you'll likely find the answer here. But before you get overwhelmed by the choices of seminars, keynotes and tutorials, we've narrowed them down for you with this nifty ComNet '98 planning guide. Use it and you'll see the best events ComNet '98 has to offer.

Telecommunications Breakdown

If you think telecommunications policy is about as exciting as setting jumpers on a network interface card, you haven't been part of a Richard Wiley town meeting. Wiley, a senior partner at the Washington, D.C. law firm of Wiley, Rein & Fielding, and former general counsel, commissioner and chairman of the Federal Communications Commission, knows how to get to the movers and shakers. And he's done just that for two sessions at ComNet.

"Town Meeting: Telecommunications Mergers and Acquisitions: Inevitable or Inappropriate?" promises to hold your interest. You'll watch Joel Klein, who's heading up the Department of Justice's fight against Microsoft; Susan Ness, an FCC Commissioner, and others take on today's hottest political issue. This session meets Wednesday, January 28 at 4:30 p.m.

Earlier in the day, Wiley has put together Senate Committee staff members, telecommunications industry experts and FCC members to discuss telecommunications policy issues in a sesssion called "The Washington Scene," which meets Wednesday, January 28 at 10:45 a.m.

OUR PICKS

Monday

January 26

Two-day Tutorials

Monday and Tuesday, 8 a.m. to 4 p.m.

BUILDING HIGH-PERFORMANCE INTRANETS: TECHNOLOGIES, ALTERNATIVES, SOLUTIONS AND MANAGEMENT

Is your boss hounding you day and night to come up with a chart on what it's going to take to deploy a companywide intranet? If so, this is the tutorial for you. Instructor Atul Kapoor of Kaptronix, will show you the way to add an intranet onto your network without bringing down you or the system.

Monday and Tuesday, 8 a.m. to 4 p.m.

DESIGNING HIGH-PERFORMANCE LANS

Learn how to integrate Layer 2 and Layer 3 switching, 100Base-T, Gigabit Ethernet, ATM and virutal LANs into your networks, even if they're based on token-ring technology. Charles Feltman, of Insight Communications, also will present case studies to show you what works and what doesn't.

Monday and Tuesday, 8 a.m. to 4 p.m.

TELECOMMUNICATIONS ESSENTIALS PART I: VOICE AND DATA NETWORKS. A HIGH-LEVEL OVERVIEW

Lillian Goleniewski, president of the LIDO Organization, explains telecommunications technologies in plain English, from a beginner's view to showing how switches, WANs, LANs and the Internet interoperate. This is a course for anyone who wants to know the services various networks can provide. Note: Part II will be held on Tuesday from 8 a.m. to 4 p.m.

One-day Tutorials

Monday, 8 a.m. to 4 p.m.

BUILDING SUCCESSFUL INTRANET AND EXTRANET APPLICATIONS ON MULTIVENDOR NETWORKS

Don't let varying vendor standards get you down; look to the World Wide Web instead. Scott Helmers, a director with the Harvard Computing Group, will demonstrate intranet and extranet products right before your eyes. He also will show you how to take advantage of Web standards to develop new network-based applications.

Half-day Tutorials

Monday, 8 a.m. to 11 a.m.

INTEGRATED VOICE/DATA/VIDEO BROADBAND NETWORK DESIGN

You know it's coming: the day your boss realizes it's theoretically possible to integrate voice, data and video across the LAN and WAN. He will want to be able to beam messages to the entire work force. And he will want it next week. Before this happens to you, check out this tutorial that will impart strategies for implementing large-scale integrated network environments. The tutorial is led by Andrew and Lee Afflerbach of Columbia Telecommunications.

1 p.m. to 4 p.m.

ELECTRONIC COMMERCE: TEN WAYS TO FAIL

Make no mistake about it, when your company decides there's money to be made on the Web, it'll fall on you to make it happen. Let technical consultant Mark Gibbs show you how electronic commerce can be implemented, how it can muck up your network strategy, and how to keep an eye out for trouble.

OUR PICKS

Tuesday

January 27

One-day Tutorials

Tuesday, 8 a.m. to 4 p.m.

ARCHITECTURES FOR LAN TO ATM NETWORKING

Many analysts are beginning to see ATM as a high-performance technology that will be integrated within the network, not replace it. IBM network consultants Tom Hadley and Laura Knapp take you through today's technology and show you how ATM can enhance your backbone without disrupting your network.

Tuesday, 8 a.m. to 4 p.m.

SECURITY AUDIT, ATTACK AND THREAT ANALYSIS

Uday Pabrai, of Net Guru Technologies, the Internet Certification Company, shows you how to sniff out the security holes in your network, how to watch who's watching you, and how to fix these problems. Emphasis will be placed on securing a Windows NT system configured on a TCP/IP network.

Half-day Tutorials

Tuesday, 8 a.m. to 11 a.m.

SWITCHED ETHERNET AND FAST ETHERNET: NETWORK DESIGN RULES OF THUMB

To switch or not to switch, that's your lifelong problem. Ed Mier, of Mier Communications, tells all about switching, such as when to use full duplex; finding and fixing bottlenecks; mixing Ethernet/Fast Ethernet with routers, ATM and FDDI; and whether Gigabit Ethernet should be part of your plans.

PICK OF THE DAY

Keynote: Networking: The Next Generation

Tuesday, 11:30 a.m. to 12:30 p.m.

Eric Benhamou, chairman & CEO of 3Com, discusses the future of network computing, including where the Internet is headed, the role of government in the Internet, and how all of this will affect the role of the network manager.

Tuesday, 1 p.m. to 4 p.m.

ADVANCED FRAME RELAY

Learn how frame relay compares to broadband technologies such as ATM, ISDN, Switched Multimegabit Data Service and Synchronous Optical Network (SONET), especially for business requirements, architecture, design and standardization. David Turya Mureeba, of Global Electro-Comm. International, will get into the nuts and bolts of frame relay implementation, including frame relay access device/router configuration, data encapsulation with IP/IPX, X.25 and SNA.

Wednesday, 10:45 a.m. to 12 p.m.

WAN ACCESS EQUIPMENT

Dave Koehler, of the NetPlex Group, takes on the daunting task of teasing out the differences between multiple WAN offerings. He'll moderate a panel discussion of the different approaches vendors have taken to WAN access and help you come up with a package that fits your network.

Wednesday, 12:30 p.m. to 1:45 p.m.

IMPLICATIONS OF THE YEAR 2000 PROBLEM AND THE NETWORK

Computerworld Editor Paul Gillin moderates a panel discussion of how the Year 2000 problem will hit the enterprise and what you can do about it. The discussion will include an examination of the parts of the network that must be checked, including older PBXs, legacy hardware and communication servers.

OUR PICKS

Wednesday

January 28

Wednesday, 8 a.m. to 9 a.m.

GIGABIT ETHERNET: HELP OR HYPE?

Ed Mier, president of Mier Communications, moderates a panel of experts who will discuss the standardization of Gigabit Ethernet, if and where you should use Gigabit Ethernet, and the pros and cons of this emerging technology.

PICK OF THE DAY

Keynote: The Internet, From the Shoulders of Two Giants

Wednesday, 2 p.m. to 3 p.m.

Stewart Alsop, of New Enterprise Associates, moderates a discussion on the future of the Internet between Vinton Cerf, the man who wrote the Internet protocol, and Bob Metcalfe, the inventor of Ethernet and founder of 3Com.

OUR PICKS

Thursday

January 29

Thursday, 8 a.m. to 9 a.m.

NETWORK DESIGN TOOLS AND CAPACITY PLANNING

Did you know there is an increasing number of tools and services to help you plan a scalable network into the next century? This session addresses the toughest aspects of capacity planning, including LAN overhead, IP vs. IPX, efficient transport, modeling and simulation and Web server management. Rick Villars, senior analyst at International Data Corp., moderates.

Thursday, 10:45 a.m. to 12 p.m.

HOW RELIABLE IS WINDOWS NT?

Laura Wonnacutt, technical director of *InfoWorld* Test Labs takes a real-life look at Windows NT as a network operating system. She'll use actual lab results and the opinions of a panel of experts to find out whether NT is really ready to replace Unix as the network operating system.

PICK OF THE DAY

Keynote: Beyond the Browser: The Internet as a Utility for the Delivery of Services

Thursday, 9:30 a.m. to 10:30 a.m.

Kim Polese, president and CEO of Marimba, will discuss how the Internet will change the way companies do business in the next century and examine the infrastructure necessary to make it happen.

Network World's NETWORK MANAGEMENT SHOWDOWN

Thursday, Jan. 29
12:30 p.m. to 1:45 p.m.
Renaissance Hotel
Grand Ballroom

Get beyond vendor hype and rhetoric. Listen to leading systems and network management executives from vendors such as IBM/Tivoli and Computer Associates answer tough questions from veteran industry experts Kevin Tolly of The Tolly Group consultancy, Rick Villars from the International Data Corp. research firm and *Network World* Senior Editor Jim Duffy.

Find out what's really going on in the network and systems management arena.

Moderator: John Gallant, editor in chief, *Network World*
Panelists: Tom Bishop, vice president of Infrastructure and Development, IBM/Tivoli; Stephen Borcich, director of Product Development/Network Software Group, Sun Microsystems; Yogesh Gupta, senior vice president/Product Strategy, Computer Associates; Martin Haworth, manager of Solutions and Support Services, Hewlett-Packard OpenView Software Division; and Chris Oliver, chief technology officer, Cabletron.

FEATURE

Management marathon

Profiles of CA Unicenter and Tivoli TME users shed light on the tortuous road to network and systems management nirvana.

By Elisabeth Horwitt

Whether you choose Computer Associates International, Inc.'s Unicenter TNG or Tivoli Systems, Inc.'s TME enterprise management framework, count on deployment to be costly, onerous and slow. On the other hand, if implemented properly — and that's a big "if" — the frameworks will help you automate, centralize and streamline your network and systems management operation.

That's the gist of our site visits to two successful implementers of the two major frameworks: Allegiance Corp., a medical products manufacturer in McGaw Park, Ill., which went with CA's Unicenter TNG, and Charles Schwab & Company, Inc., a San Francisco-based brokerage that invested in Tivoli's TME.

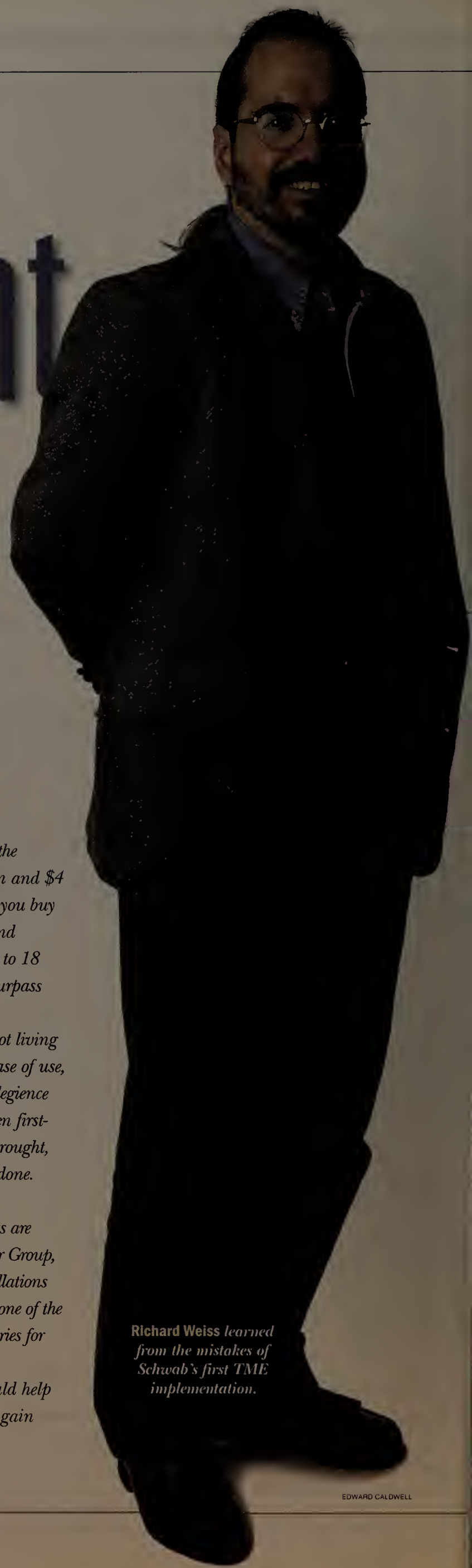
In some respects, the users painted a different picture of the frameworks from the one you'll get from most industry analysts, who routinely rap the massive management products as being overly expensive and ineffective.

Yes, the products are expensive, although coming up with specifics on price is nearly impossible given the degree of customization required. Jeff Hersh, manager of Deloitte & Touche Consulting Group, a New York-based network consultancy, says the framework itself can cost between $1 million and $4 million for a Fortune 500 enterprise. Once you buy additional modules and factor in design and deployment, which takes anywhere from six to 18 months, the implementation costs quickly surpass the salaries of most professional athletes.

Analysts also knock the frameworks as not living up to their promised levels of integration, ease of use, consistency and distributed capabilities. Allegience and Schwab would beg to differ, having seen firsthand the efficiencies the frameworks have brought, although they will agree there is more to be done. Isn't there always?

The users would have to agree the products are complex, however. A recent survey by Gartner Group, Inc. found Unicenter TNG and TME installations only have a 30% success rate. Schwab was one of the unfortunate 70% at one point; it took two tries for the company to get TME right.

The Allegiance and Schwab stories should help you understand what these buyers hope to gain and how much effort it will take to make it happen.



Richard Weiss *learned from the mistakes of Schwab's first TME implementation.*

EDWARD CALDWELL

Schwab makes a second investment in TME

When an enterprisewide software implementation fails, rarely do the implementers immediately turn around and decide to have another shot with the same product.

Charles Schwab & Company, Inc. did exactly that, however, after its first deployment of Tivoli Systems, Inc.'s TME enterprise management framework sputtered in 1993. Back then, the platform never achieved wide usage at Schwab — partly because it was an early version that offered more promise than substance and partly because the original implementers made some mistakes, says Richard Weiss, architect of enterprise management systems at the San Francisco-based brokerage.

Schwab took another shot 18 months ago and implemented TME 2.0, now part of the IBM TME 10 network and systems management family. Despite the company's prior experience, the second deployment was far from a walkover.

"When Tivoli says TME is a framework, it means it," says David Bruce, a senior staff member in Schwab's Phoenix data center who was a major participant in the second TME deployment. What comes out of the box are the software equivalents of "concrete and lumber," he says, basic building blocks that require a great deal of customization.

Two to two and a half full-time IT workers spent about a year defining and designing the TME basics, including standard policies and procedures, thresholds and automated responses, Bruce says.

Weiss declined to say how much Schwab paid for TME, citing special discounts for being a beta user and the fact that the second deployment built on existing TME software.

However, the management software alone easily can run into seven figures for a major installation like Schwab's, Weiss confirms. Prices range from $2,000 per managed server and $75 per managed client, he says. Given that Schwab has more than a thousand IBM AIX, Windows NT and Sun Solaris servers located at six computing centers and some 10,000 end users at 300 branches nationwide, that comes out to one hefty software tab.

And the software wasn't the most expensive part of the rollout, Weiss says. Far greater were the human costs of planning, design, implementation and training.

"TME in its present form is very powerful but requires a lot of configuration work up front to make it usable," Weiss says. "It takes commitment on the part of implementers and a leap of faith by the business people funding it. [IT] has to communicate to business people that this is something that will require a lot of work and will take months before you start to see a return on investment [ROI]."

See **Schwab,** *page 40*

Allegiance puts its faith in Unicenter TNG

At first glance, the computer operations control center at Allegiance Corp. perfectly exemplifies the swivel chair type of network and systems management that network IS staffers love to hate.

On one wall there are rows and rows of management consoles, each tying into a different network or systems management tool or managed system. There's SunNet Manager to monitor the activity of LANs, routers and switches, and multiple system management tools specific to the various platforms in use, including various flavors of Unix, Windows NT, MVS and CICS. Allegiance has some 400 servers at 100 sites nationwide.

To get a composite view of how the different pieces work together, workers at corporate headquarters in McGaw Park, Ill., need to shift from monitor to monitor. Worse, each move requires a mindshift to a different environment and all the commands, icons and operations that accompany it.

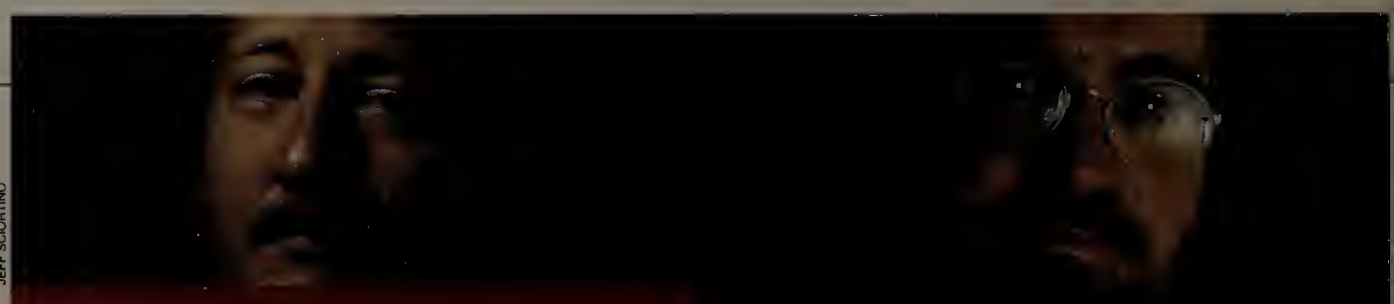
This is exactly the kind of costly, kludgy and inefficient configuration that corporate IT departments have been trying to get away from for at least the past decade. However, operations control users won't have to put up with it much longer. Come spring, all of the event and alert streams feeding into the different operations control center consoles will be consolidated onto Allegiance's enterprise systems management platform, Computer Associates International, Inc.'s Unicenter TNG.

When that happens, users will be able to monitor system activities enterprisewide from a single 67-inch console; and the dozen or so monitors on the wall will be relegated to backing up TNG in case of failure, according to Tony Navarro, director of enterprise technology services at Allegiance.

See **Allegiance,** *page 41*

Tony Navarro and Tom Cesar *are hoping Unicenter TNG will help Allegiance escape the swivel chair type of network and systems management.*

JEFF SCIORTINO



JEFF SCIORTINO

Tony Navarro, *director of enterprise technology services at Allegiance, a CA Unicenter TNG customer*

Richard Weiss, *architect of enterprise management systems at Schwab, which uses Tivoli's TME*

What are the main benefits of an enterprise management framework?

The costs of managing a growing number of major enterprise systems stayed the same or went down.

Cost efficiencies of managing a distributed, multivendor enterprise installation; increased ability to meet or exceed SLAs.

What were your reasons for choosing that particular framework?

Unicenter had NT management in 1994 and the other products did not.

There weren't a lot of choices besides TME back in 1993. TME partially supported the OSF's Distributed Management Environment, which dovetailed nicely with Schwab's ongoing deployment of the OSF's Distributed Computing Environment.

What gaps would you like the vendor to fill?

Deeper integration with network management systems such as SunNet Manager and Optivity; management of network services such as messaging.

More integrated management of a broader set of application software packages; lightweight, easier to install client software for managed systems.

What was the most pleasant surprise about the product?

Unicenter TNG's ease of installation and depth of performance monitoring of some servers, such as NT SQL Server.

TME basically does what it's expected to; Tivoli's application management model fit in with Schwab's existing applications and management concepts.

What would you do differently if you did it over again?

Make more use of CA's professional services instead of working things out on our own for 99.5% of the implementation.

Fuller up-front definition and planning of policies and procedures.

Schwab, *continued from page 39*

For proprietary and competitive reasons, Bruce and Weiss refused to divulge ROI figures, other than to say the investment company is achieving the cost efficiencies and proactive management that prompted Schwab's initial TME purchase.

Indeed, the benefits have been substantial for other large companies that implemented TME, according to a 1997 report by International Data Corp. Commissioned by Tivoli, the study of 10 global companies found the sites gained a payback on total implementation costs in an average of 115 days. The annual savings per 100 users came to $14,065 in management efficiency, $117,533 in management productivity and $89,769 in availability.

Trying again with TME

Bruce, who joined Schwab when the TME rollout was in progress, is charged with running a Tivoli Managed Region, or group of servers, at the Phoenix data center. There, for example, staffers have programmed TME agents to automatically take care of 95% of the alarms, Bruce reports. As a result, "instead of getting called three times a night, we only get called for the exceptions," he says.

Agents also have been programmed to handle housecleaning chores such as periodically cleaning out systems logs and responding to common problems. Relieved of fire fighting and grunt work, six administrators can effectively manage 163 systems, Bruce says.

While keeping people costs down is important, a far more crucial justification for TME, as far as management is concerned, is data center managers' improved ability to meet or exceed service-level agreements (SLA), Weiss says. Schwab's SLAs basically guarantee users that network performance variables won't fall below certain levels.

Optimizing response time and availability has become particularly crucial to Schwab now that more and more customers access its systems directly via the World Wide Web instead of having a service representative do it for them, Weiss says.

Phil Wade, Schwab's vice president of enterprise management systems, oversaw the second TME implementation, while Weiss led the technical work. Joining the company after the first TME try, Wade agreed with his predecessors that Schwab needed a distributed, object-oriented framework to manage its mix of resources.

"One of the driving reasons we wanted a product like Tivoli is to get early notification when something goes wrong so we can fix it before it impacts our customers," Wade says.

When Schwab chose TME in 1993, Tivoli was one of the few vendors promising anything close to a distributed network and systems management framework. But Weiss says the early version of TME fell short of its promise.

For example, there was no cross-platform management from a central console, he says. It also was impossible to establish interaction between distributed management domains, or "regions," as Tivoli calls them. "It was not possible to build a large-scale distributed management system," Weiss says.

So why did Schwab choose TME the second time around? The investment it already had made in the product was part of the reason, but more important, "Version 2.0 was a big improvement — much more of a framework," Weiss says. Furthermore, the first try gave the enterprise management systems group a good grounding in the ins and outs of TME. For those reasons, Schwab never seriously looked at a rival enterprise management framework.

The secret to Schwab's success

The second implementation succeeded thanks to significant improvements to TME and the way IT handled the deployment, according to Weiss. In particular, IT learned that getting management policies and procedures right in advance was at least as important as correctly deploying and operating the actual product.

Policies implement the terms of the all-important SLAs, such as maximum acceptable response time and hours of availability for various critical business applications. The trick is defining what constitutes a problem, who gets notified and how to escalate it, Weiss says. For example, CPU utilization of 90% may be unacceptable for one application, while the threshold is 50% for another. Once the threshold is exceeded, does a management agent initiate action? If not, which person, node or application does it alert?

The management systems, systems engineering, operations and application development staff all cooperated to define policies and processes because they all share responsibility for managing and ensuring optimal availability and response time levels for corporate systems, Weiss says. It took the group about six months to design and set up the basic policies that would be consistent across the enterprise.

"We were probably a little lax in the beginning in ensuring uniform implementations across the enterprise," Weiss concedes.

From a technical perspective, policy deployment was made fairly easy by TME's object-oriented, agent-based architecture, Weiss says.

By subscribing to a group, managed objects can inherit characteristics of other objects in that group, such as a CPU usage threshold for a server or a security level for a user. A group could be defined as all servers supporting a particular mission-critical application or all users at a certain managerial level. Object orientation allows IT to define policy at one location and propagate it to TME agents across the enterprise. TME also includes prewritten scripts for basic tasks such as monitoring and automatically responding to key events such as when a threshold is exceeded. Schwab programmers then customized those scripts to the company's management parameters.

More difficult was getting individual user groups to implement the standards, Bruce says. Some highly profitable divisions have resisted standardizing, he says. "But they're beginning to understand the business costs of not adhering."

Consistency of both basic management policies and system configurations is crucial to TME's long-term success at Schwab, Bruce and Weiss agree. "End-to-end systems and network management depends on standardizing the way in which the system is going to tell you when it is down, what it tells you and how," Bruce says.

If his machine sends a different type of alarm from that sent by the same type of machine in the Denver data center, the systems monitoring and alarm correlation programs won't be able to figure

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out what's going on, he says.

Standardized policies were a comparative snap to implement because TME can propagate the definitions across the enterprise. The next phase of defining and manually configuring customized scripts and thresholds for specific applications and projects was much tougher and more time-consuming, Bruce reports.

Even with standardization, the scope of the job is monumental, simply because of the number of different processes TME monitors on an individual server — 40 in all. It takes 20 to 30 minutes to set up each different type of information to gather, Bruce says. For example, agents need to be set up to monitor individual daemons, or processes on a server, and notify somebody if one dies. "For an Oracle [Corp.] application or an operating system, you're talking five or six daemons," Bruce says.

At the Phoenix data center, it takes about 40 hours to set up a standardized TME configuration managing a new project, which might comprise a server running Oracle and a couple of applications, Bruce says. "If you need to customize, you're talking 80 to 120 hours."

Room for improvement

In addition to the time it takes to configure and customize TME, the product has other shortcomings.

For instance, Bruce is eager to try Tivoli's recently announced lightweight client. The regular TME client software consumes about 80M bytes on every managed machine, while the lightweight client requires significantly less resources, he says. It accomplishes this by placing much of the client modules on the server. That takes some weight off the managed systems but adds traffic to the network, Bruce points out. "We wouldn't want to use [the lightweight client] wholesale."

Weiss puts deeper integration between TME and a broader range of third-party management tools and systems high on his wish list. Tivoli has published APIs that enable third-party vendors to integrate their tools into TME. And like CA, Tivoli has hundreds of vendor partners. "But there is a wide range of integration levels you can build into a product and still be a partner," Weiss points out.

Obviously, the TME framework is integrated most tightly with its own core modules. Weiss likes to use the Courier file distribution module to deploy new versions of the framework or various underlying applications. The asset management module can work with Courier to prequalify a target node's configuration, for example. This is by no means a given if you choose a third-party asset management tool, he says.

Third-party software boasting tight integration with TME is beginning to emerge, Weiss says. Known as Plus Modules, these products can take advantage of core TME capabilities. For example, a user at a TME console can interact with a third-party management application to remotely configure a threshold on, for example, a router, or send a command down to take that router offline.

One such Plus Module, Legato Systems, Inc.'s Networker, allows users to monitor the status of backup jobs right from TME, while Remedy Corp.'s ARS can open trouble tickets based on events received from TME.

TME provides a satisfactory level of integration with Schwab's network management system, Hewlett-Packard Co.'s OpenView, according to Bruce. The Event Console allows managers to look at both types of alerts. In addition, TME can correlate network and system alerts, letting an administrator know, for instance, that he should be getting alarms from certain machines if a router goes down.

Weiss wants more. "What I would like to see is full topology integration, where Tivoli can have access to topology maps and managed objects of OpenView," he says.

If Tivoli succeeds in providing tight integration between TME and IBM's AIX-based TME 10 NetView, Weiss says he reluctantly would consider migrating to it from OpenView. IBM has been slowly integrating NetView with TME under its TME 10 product umbrella.

Right now, however, much of Schwab's energy is concentrated on setting up application management under TME. For example, Bruce's group has developed a utility that automatically monitors application event logs. And Weiss' group has deployed many of the agents to monitor the network devices and servers on which distributed applications run.

What the group has been eagerly waiting for is the recently released TME 10 Global Enterprise Manager (GEM), which promises to help TME manage application SLAs in relation to the underlying servers and network systems across the enterprise.

GEM can discover application-level details and use the accompanying Applications Policy Manager to propagate policies down to that level. GEM also includes the Application Management Specification, which defines standardized formats for describing an application's management characteristics.

AMS could turn out to be the systems management equivalent of Management Information Bases, Weiss says. First, however, Tivoli needs to establish the specification as an industry standard among independent software vendors, where support has been slow in coming.

Weiss' group is fairly confident, however, that Tivoli will deliver what it takes to integrate application management into the enterprise context.

Overall, TME's long-term advantages more than make up for the expense and hassle of deployment, Bruce and Weiss agree.

"If you're intelligent about doing your work and use Tivoli to manage all the standard stuff, you only have to take care of a problem once," Bruce says. ■

HOW TIVOLI TME SAVES TIME

Operations management time savings comparison for point solutions vs. TME:

Operational task	Time savings after implementing point solution	Time savings after implementing Tivoli solution
Network troubleshooting/repair	1%	12%
Network performance management	1%	11%
Server OS support and tuning	1%	33%
User support/help desk	26%	14%
Server setup and configuration	6%	37%
Capacity planning	29%	2%
Disk, file and database management	8%	66%
Backup and archiving	6%	71%
Disaster planning and recovery	3%	51%
Batch jobs and file transfers	31%	46%
Application management	22%	23%

Source: International Data Corp.

Allegiance, *continued from page 39*

It will have taken Allegiance's technical staff almost two years of hard work to reach this crucial — but by no means final — phase of TNG deployment. Close ties with CA enabled the firm to start trying out a beta version of Unicenter TNG in July 1996, well ahead of the product's general release this past January.

Unveiling Unicenter

The basic setup of the TNG framework didn't take all that long, Navarro reports. It took about five work days to configure the TNG RealWorld console and system alerts, he says. It took another half-day to load and set up the repository, which holds systems configurations, trouble tickets and other key data. It also took about a day to design and set up thresholds on agents for SQL and NT servers. Once Allegiance had created a customized "server build process" based on Unicenter's Unattended Install program, deployment of those customized agents was a simple matter of requesting TNG to update a particular server.

More time-consuming was "defining [business] processes and procedures" that in turn determine critical thresholds and automated response scripts for each server, Navarro says. "It takes us about 30 minutes to an hour to set up a single business process view."

Technical Services had a production version of TNG up and running for operations center people to start using as early as last March. However, it was a limited, initial implementation that primarily provided automated alerts and scripted responses to key events on NT and Unix systems, he adds. The consolidation of alerts from all systems managed by the operations control center is only now nearing completion.

On the network management side, Allegiance's separate Network Control Center still is very much in the process of integrating TNG with existing management tools and applications such as Cisco Systems, Inc.'s CiscoWorks and Bay Network, Inc.'s Optivity.

The roll out of TNG software to remote sites to enable remote management is expected to stretch over the next two and half years.

Furthermore, the two-year TNG implementation does not include the time that Technical Services spent several years ago implementing the earlier Unicenter systems management platform on which the current TNG installation is built.

The lengthy time frame attests to the complexity of the TNG platform itself as well as to the monumental task for which it is being deployed: consolidated, centralized management of multivendor network, systems and applications enterprisewide.

However, Navarro's people have no doubt that the present and future benefits of TNG will be worth the time and trouble. While Navarro refused to divulge actual return on investment (ROI) figures, he points out that the medical products manufacturer was one

of 10 companies recently surveyed by International Data Corp. for a 1997 report on integrated management systems. The CA-sponsored study found integrated network and systems management suites such as Unicenter provided a total annualized savings of $507,000. Of that figure, $368,000 comes from improved availability and $77,000 from automation of management tasks. Corporations gained a payback for such systems in an average of 69 days.

The report also found that implementing Unicenter cut average downtime from 6% to 1%, resulting in average annual savings over a five-year period of $120,000 per 100 users. Automation of security administration and virus detection resulted in initial savings of $29,000 per year for every 100 users, according to the report.

On the cost side, businesses invested an average of $59,000 per 100 users in purchasing and setting up Unicenter and training their staffs. It should be noted that the report is based on the earlier Unicenter, which lacks TNG's object orientation and network and application management capabilities.

Migrating to new management

Allegiance's computer operations department always has sought a central focal point for messages from systems, network and application management tools and domains, says Tom Cesar, a technical analyst and lead TNG implementer at the company.

Prior to TNG, Allegiance partially consolidated its systems and network exception messages for the mainframe using CA's NT-based Automation Point software. Automation Point monitors, consolidates and provides automated responses to events on Unix and IBM MVS systems. It is integrated with Unicenter for event correlation, CA says.

However, Allegiance intends to complete migration from mainframes to distributed systems sometime this year, which makes Automation Point an increasingly nonviable solution.

Technical services started shopping for an enterprise systems management platform in 1994. "We didn't want to integrate a bunch of client/server management solutions ourselves. We wanted out-of-the-box integrated product suites," Navarro says.

The company evaluated platforms from Boole & Babbage, Inc., Digital Equipment Corp., Hewlett-Packard Co., OpenVision and Tivoli Systems, Inc. One of the big reasons Unicenter won out was because it could manage NT servers immediately. Rivals such as Digital and Tivoli hadn't yet delivered that capability, Navarro says. This was important because Allegiance had just implemented a strategic NT-based just-in-time order processing system.

Still, Unicenter 1.X only tackled the systems side of the enterprise management challenge. As a major CA customer and partner, Allegiance had an active part in Unicenter's metamorphosis into an integrated, distributed network/systems/application management framework.

At Allegiance, Unicenter TNG goes well beyond monitoring applications for bad bytes or interrupted processes. The framework also watches systems and network devices and correlates application activity with other key information, such as server CPU and disk usage levels or network traffic spikes. There are 47 optional TNG management applications to handle functions such as monitoring, inventory, asset management and job scheduling. These CA applications offer a high degree of integration with core TNG components and each other.

TNG applications can send alerts to the console for real-time viewing and to the object-oriented common repository for future analysis. What's more, they also can use core TNG administrative tools that handle tasks such as software distribution, automated workload management and calendaring.

For example, the systems backup tool and the automated system log cleanup tool can look at the same calendaring function to ensure their schedules don't conflict.

While deployment isn't yet complete, TNG's integrated functions already are creating savings for Allegiance in the form of improved productivity. IT has rolled out new environments without adding to the systems management group of five, Navarro says.

But TNG really will start to prove its worth when Cesar's group completes consolidation of the various alerts and events coming in from various managed systems onto the main console. "It will give the workers who monitor the network a focal point where they can see everything they need to be concerned about right in front of them," Cesar says.

Cesar's staff still is working on the three-dimensional graphics in TNG's Real World user interface. "We're still not sure if we really need the 3-D," Cesar admits. What the workers do need, however, is the console's ability to zoom down to agents on SAP, NT or Unix systems, enabling them to reconfigure thresholds, reschedule a server job or reconfigure workload parameters, he says.

This kind of centralized management wasn't possible with Unicenter 1.5's Enterprise Manager, which Cesar says lacks network management altogether. The product only allowed administrators to look at one server or function at a time and didn't permit managers to view routers or hubs from the central screen.

Unicenter has come a long way since then, Navarro notes. Indeed, TNG is less a new version of Unicenter than an entirely new architecture, making the decision to migrate to TNG a no-brainer, according to IT staffers.

TNG's automated discovery and distribution tools made it fairly easy to set up and deploy the software and agents, Navarro says. After Technical Services installed TNG on top of the old Unicenter 1.X, TNG went out and discovered all the old Unicenter modules and replaced or upgraded them.

On the other hand, migrating from a systems management suite to an enterprise management framework constitutes a quantum leap in understanding, according to Cesar. Navarro's people learned TNG through hands-on work with the CA beta version, Navarro says. Operations users got an initial half-day training session, followed by a second session a few months later.

There's more work to do

Cesar's group currently is determining how much disk and RAM space and CPU power TNG uses on various systems, including the managed servers and the central repository node that collects, processes and stores incoming management data. "It's a pretty big drain," Cesar says, which is why he upgraded the TNG system to a 200-MHz Pentium Pro dual-processor server.

Cesar's group also still is learning how to configure TNG to meet different users' network management needs. For example, the operations center workers who man the TNG console need to see key alerts that filter up from SNMP traps on Cisco routers or Bay hubs. "Specialized tools like CiscoWorks are beyond them," he says.

But Allegiance's network managers need the deeper functionality of CiscoWorks and Optivity, Bay's management system. For instance, Optivity can show details such as which port lights are on and off, Navarro says.

Allegiance's Remote Monitoring and SNMP traps allow TNG to obtain error and traffic-level data directly from hubs and routers. However, this is passive, one-way SNMP device polling.

CA is working to improve integration between TNG and major network management systems such as CiscoWorks, Optivity and Cabletron Systems, Inc.'s Spectrum, according to a CA spokesman. When that is complete, Navarro says, his group will be able to actively manage a hub or router from TNG.

TNG also has some gaps to fill when it comes to application management. For example, the framework can manage some aspects of Lotus Development Corp.'s Lotus Notes and Microsoft Corp.'s Exchange, but it can't manage messaging systems as networked applications, Navarro notes. He says IT can use TNG's published specifications to write its own agents to manage the e-mail network from TNG if this becomes a priority.

On the other hand, Cesar was pleasantly surprised by the level of performance monitoring TNG's NT SQL agent provides. TNG also manages all the important aspects of R/3, with one exception: software updates, which are part of a closed SAP architecture. "SAP is going to expose more APIs in the next release," he says.

TNG's generic capability of reading virtually any application or system event log is particularly useful to Navarro. IT developed standard specifications that dictate exactly what and how internally developed applications report to the log. "You write to this API to trigger this workload tool or log this event," he says. But if you buy something off the shelf, there's not a lot you can do to control what the product reports to TNG via the log, he adds.

Overall, however, "there are no gaping holes, no big-ticket items we want to see [in TNG]," he says. "Anyway, nothing is ever 100%." ■

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REVIEW

WE PIT MICROSOFT'S ROUTING AND REMOTE ACCESS SERVER AGAINST A LOW-END CISCO BOX TO FIND OUT WHICH IS BEST OVERALL.

Software-based routers: Can they do the job?

By Jeff Bankston

Microsoft Corp. would have you believe the software-based router it offers at no charge with Windows NT Server will enable your existing servers to take on basic workgroup routing tasks. We decided to pit the company's Routing and Remote Access Service (RRAS) against a low-end Cisco Systems, Inc. 2514 router to see just how much substance is behind Microsoft's claim. The answer? A fair amount, although, in reality, RRAS is far from free.

ADMINISTERING RRAS

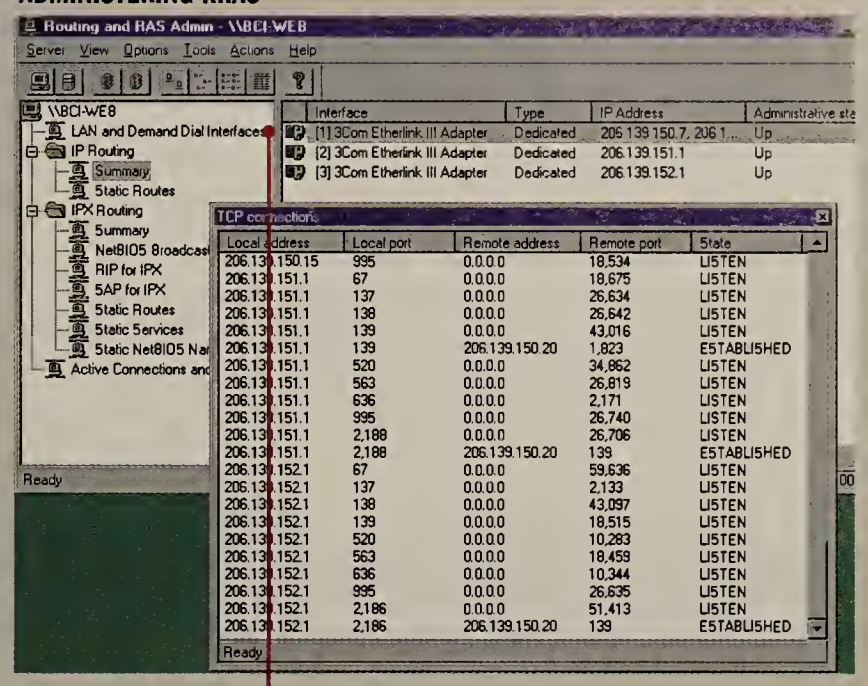

Figure 1: *RRAS' administration tool gives you a graphical view of each adapter and its status.*

We found that RRAS works as stated for workgroups with a couple dozen users per segment, if you shell out for a high-powered server and adapters. But for larger installations, a dedicated hardware-based router is a better choice.

We chose the 2514 because it's priced at the low end of Cisco's line and thus was the best choice to compare with a router that's included at no extra charge with Windows NT. But the two products are not completely comparable.

Specifically, RRAS has extra features to support dial-in connections via modems or ISDN adapters installed in the server. Low-end Cisco routers have no such capabilities. To gain these features, you would have to go to the midrange series, such as the 4000 models.

On the other hand, the Cisco 2514 offers faster processing speed as well as two synchronous serial ports for connections to wide-area links. However, its network interface runs at only 10M bit/sec, while an NT Server can support 100M bit/sec network interface cards (NIC).

Because of the varied capabilities of the products, we focused solely on their ability to route between two segments or subnets to see which needs each satisfies best.

Performance

Performance is the key criterion by which a router is measured. We began testing with 10M bit/sec NICs in the server running RRAS. With a full complement of 20 users printing and running SQL Server queries as well as a backup running across the network, the server running RRAS showed a steady CPU load of 23%.

Users saw a significant degradation in network performance, with collisions in excess of 17%. Increasing the traffic forced the CPU to work even harder, and the server was unable to keep up with the load.

Since Fast Ethernet NICs are now commonplace, we next replaced our 10M bit/sec NICs with 100M bit/sec models. CPU utilization dropped to 6%, and collisions were virtually eliminated.

Running the same tests using the Cisco 2514 to route between our two subnets, the processor of the 2514 ran at only 6% of capacity, according to the CiscoWorks administration software used to administer Cisco devices. Unlike the RRAS server, when the 2514 was running at 10M bit/sec, its internal processor handled every IP and IPX packet without dropping a single one.

To further press the 2514, we loaded both segments with more traffic but still were able to produce a collision rate of only 5% and CPU utilization no higher than 12%. User response time across the 2514 was drastically better than the equivalent test with RRAS. SQL query response time improved, and Internet queries no longer timed out.

Although the 2514 only works with 10M bit/sec Ethernet (and X.25 and serial synchronous traffic), it takes a powerful server and high-speed adapters for RRAS to keep up.

Even with the right hardware, we concluded that it's unwise to run RRAS on a production server that's supporting other applications. Thus, while the software is free, our test server configuration cost approximately $5,000, compared with $2,600 for the 2514.

Given that configuration, our testing showed that the dedicated hardware device performed

Score Card

	Performance (50%)	Management (30%)	Installation (10%)	Documentation (10%)	Total score
Cisco 2514	10 x .50 = 5.0	8 x .30 = 2.4	6 x .10 = 0.6	8 x .10 = 0.8	8.8
Microsoft RRAS	6 x .50 = 3.0	10 x .30 = 3.0	9 x .10 = 0.9	8 x .10 = 0.8	7.7

Individual category scores are based on a scale of 1-10. **Percentages** are the weight given each category in determining the **total score.**

better in a demanding network environment. The hardware router also had less overhead than RRAS when complex filtering was brought into play.

Some of the increase in CPU utilization with RRAS was attributed to the filters we established to protect our corporate data, while equivalent filters in the 2514 produced negligible performance degradation.

Management software

RRAS' administration program, Routing and RAS Admin, provides a graphical view of subnets, including manually created routes and the interfaces for those routes that are created by the Routing Information Protocol and Open Shortest Path First routing protocols (see Figure 1, page 43). Clicking on the IP Routing section brings you to the part where each interface is configured for static routes.

You can manage the 2514 via telnet with a command-line interface or across the LAN using the much easier CiscoWorks graphical user interface. CiscoWorks has two main parts, Configuration Builder and CiscoView. Configuration Builder (see Figure 2) provides a relatively easy way to manage router configuration, as long as you remember that any updates have to be sent to the router's memory. You can keep multiple copies of the configuration ready to be reloaded in case something goes wrong or the router is replaced. RRAS has a similar function.

To download a copy of RRAS, follow the links in Network World Fusion.

www.nwfusion.com

FIND IT ON FUSION 5313

CiscoView watches the router's ports for bad packets, collisions, giant frames and carrier-sense errors. Statistics gathered include the number of packets, large and small, as well as misaligned packets that the 2514 handles. RRAS lacks the ability to gather many of these statistics but does have decent reporting capabilities.

Net Results

	PROS	CONS
Cisco 2514 *Cisco Systems, Inc.* *www.cisco.com/cpropub/univercd/data/ciscopro/catalog/cpa2500r.htm* *$2,800 with 4M bytes RAM, IP/IPX, IOS set*	▲ Top performance	▼ Configuration, even with CiscoWorks GUI, is time-consuming
Routing and Remote Access Service *Microsoft Corp.* *www.microsoft.com/ntserver/info/routing&ras.htm* *Comes bundled with Windows NT Server*	▲ Excellent bundled remote access features ▲ Easy administration	▼ Performance in heavy traffic is subpar

Installation and documentation

For each subnet routed by RRAS, you must install one Ethernet adapter in a Windows NT 4.0 server. You have to bring down the server to make hardware changes. By contrast, a router does not require you to power it off when changing segments.

After installing the network adapters, we downloaded RRAS from Microsoft's Web site and installed it in less than 15 minutes. This is a marked contrast to the router installation — it took us one hour to set it up with all of the protocols and filters for our two segments.

Initially, we had to connect to the router using a laptop connected to the router's console port via a supplied null modem cable. An automated log-in and configuration script then took care of 90% of the tasks we had to complete. This initial configuration was easy, but ongoing management via CiscoWorks wasn't as smooth as managing RRAS with Microsoft's Routing and RAS Admin tool. One helpful feature of CiscoWorks is its ability to "learn" what settings you have installed and then set the nonvolatile memory of the router based on what it found. However, the setup of routing protocols, filters and related options takes much longer than it does with RRAS.

RRAS documentation came with the software in electronic form. It made getting started a breeze. The Cisco documentation comes on CD-ROM, and you can either browse it or install it on your PC. It was fairly complete and technically competent.

Summary

All in all, RRAS is an excellent tool for routing on small networks. We believe that RRAS, running on a Pentium 200-MHz server with PCI 10/100 adapters, could handle about 25 users per segment or up to 100 users overall before seeing significant problems.

Low-end hardware-based routers such as the 2514 are more appropriate when 50 to 75 users per segment have the same demanding needs.

For networks with heavy workloads, such as CAD/CAM or database environments, hardware-based routing is a better way to go.

The hardware router initially is cheaper overall than a high-powered server but is more complex to administer than RRAS.

Bankston is a network design and integration specialist and vice president of operations at BCI Associates, a systems integration firm in Panama City, Fla. He has designed network systems for 89 customer sites with more than 27,000 users. He can be reached at jeff@mail.bciassoc.com or (850) 874-2467.

CISCO PROVIDES FOR CONFIGURATION OPTIONS

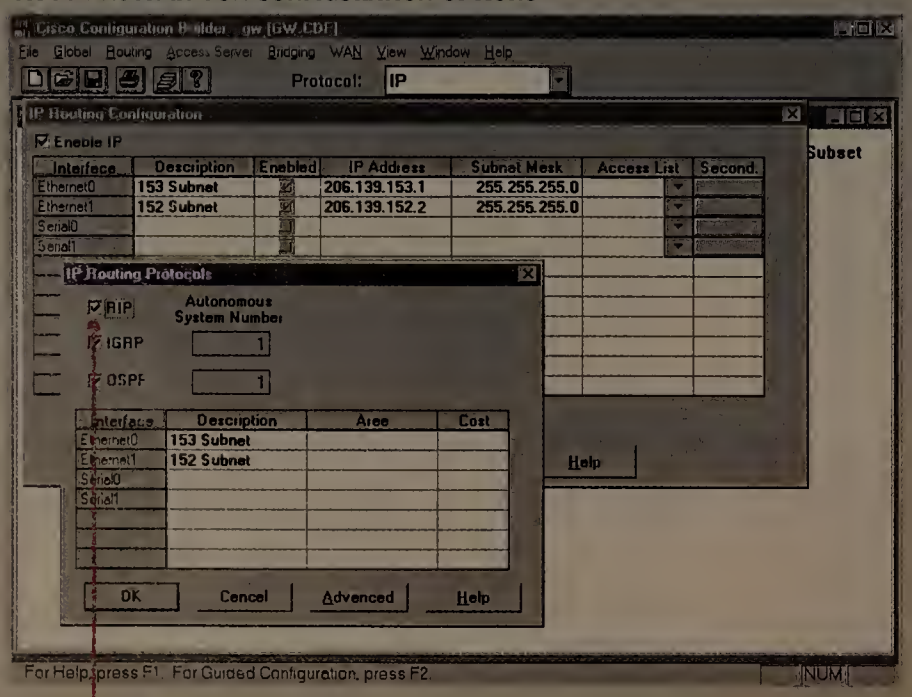

Figure 2: *CiscoWorks' Configuration Builder lets you set up multiple configurations for the router, which you then download into the router's memory.*

How We Did It

We installed RRAS on a Pentium-based 200-MHz server with 128M bytes of RAM running Windows NT 4 Service Pack 3. We used 3Com Corp. 3C905 32-bit (100M bit/sec) Parallel Tasking PCI adapters to connect to two Ethernet segments.

The Cisco 2514 routed data between two Ethernet segments at 10M bit/sec. Both RRAS and the 2514 were configured to route IP and IPX traffic.

We configured the two segments as follows:

- Subnet 0 hosted the NT server running RRAS. It supported three clients, one NT server running as a Web site and another NT Server running Microsoft SQL Server and performing DNS services.
- Subnet 1 hosted nine clients, one NetWare 4.11 server and one NT Server running as a WINS and DHCP server.

Our first test was a simple backup of data from the network management station on Subnet 0 to servers on the other subnets. Next, we had the clients on Subnet 0 access the Internet and perform FTP and HTTP operations. We used Wilson WindowWare, Inc.'s WinBatch97 to generate traffic between clients and the servers. We also tested both products' ability to filter access to confidential company data files hosted on the RRAS server.

We used a Fluke Corp. OneTouch Network Assistant and Microsoft's Systems Management Server Version 1.2 to monitor network traffic during our tests. Detailed packet analysis was performed using A.G. Group, Inc.'s EtherPeek packet analysis software.

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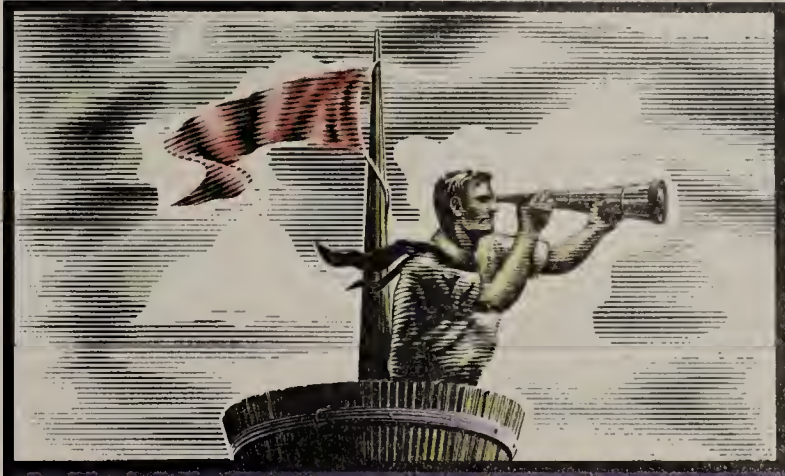

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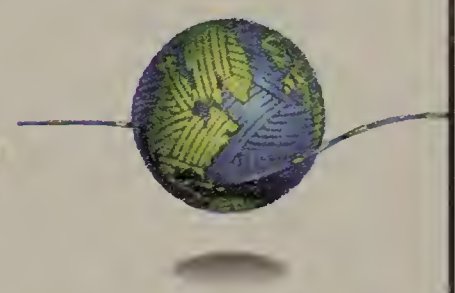

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* Indicates Regional/Demographic

DIRECTORY OF SERVICES

NT

Continued from page 1

While those users wanted the distributed services scheduled to ship with NT 5.0 — namely the Active Directory Service (ADS) — they did not want to jeopardize the stability of existing NT 3.51 server-based networks and pay for two major operating system upgrades in as many years.

Microsoft's Jim Allchin, senior vice president of the company's Desktop and Business Systems Division, still maintains that users should make the move to NT 4.0 first and then deploy the recently released NT 4.0 Option Pack. Together, the software packages lay the groundwork for many of the new NT 5.0 components, he said. For example, NT 4.0 has support for the Unix-based Domain Name System, which will act as the server locator service for ADS.

However, Allchin last week confirmed the company currently is testing a complete set of migration tools that will allow NT 3.51 users to move directly to NT 5.0. Allchin declined to detail what kinds of NT 3.51 migration tools the company is developing, saying only they will "give users as smooth a path as possible" to NT 5.0.

"We received a lot of heat from the users who just won't budge from NT 3.51 and we've had to listen to them," Allchin said.

Microsoft first shipped NT 4.0 in the fall of 1996. The company no longer sells new NT 3.51 licenses and stopped providing new service packs and bug fixes as of December 1997. However, Microsoft still offers day-to-day technical support for NT 3.51, and existing users can purchase additional server licenses.

According to industry analysts, decreasing support for NT 3.51 at Microsoft, coupled with huge growth in the NT 4.0 run rate in 1997, has significantly evened out the installed base. Gartner Group, Inc. analyst Neil MacDonald estimated that 40% of the current NT installed base is running NT 3.51.

However, because Microsoft has delayed the shipment of NT 5.0 until year-end at the earliest, some previously die-hard NT 3.51 users said they now may have enough time and resources to complete both upgrades.

Last year, Nationsbanc-CRT was one of the Microsoft customers that was concerned about forced back-to-back up-grades for its 60 NT 3.51 servers. But Rick Shope, manager of PC technology for the Chicago-based trading arm of Nationsbanc Corp., said he is less worried about that now, since he already has upgraded half of his servers and 90% of his 850 workstations to NT 4.0.

"But it's still good to hear that if I have to keep some of my machines on NT 3.51 for one reason or another, Microsoft is not going to leave me hanging when we do eventually move to 5.0," Shope said.

Kurt Guererro, a senior LAN architect with Northern Trust Bank, also in Chicago, is in the process of moving as many of the bank's NT 3.51 servers over to 4.0 as possible. He said several smaller branch offices would not get the NT 4.0 code but would need the NT 5.0 code to be included in the NT 5.0 directory tree.

"Just knowing that this tool set will be available will be helpful to our affiliate sites," Guererro said.

Staff writer Scott Lajoie contributed to this article.

Get more info online at www.nwfusion.com. DocFinder: 5321

Sun

Continued from page 1

to Li Gong, chief security architect for Sun's JavaSoft division.

"This adds a critical piece to the Java security puzzle," Gong said. "It gives individual developers and enterprise customers one set of APIs to build applications on. It also ensures that tool kits created by third-party cryptography software vendors are interoperable under our APIs."

Lack of interoperability between cryptography vendors' tool kits has made it difficult for developers to create Java applications and applets that are uniformly secure in all networks.

The new cryptography tool kit is based on the Diffie-Hellman key sharing technology, Data Encryption Standard (DES) and 3DES encryption. It also has "object streaming" functionality that lets developers encrypt and sign Java objects.

The Java security model has evolved rapidly in the past year. The original "sandbox" security architecture included in Java Development Kit (JDK) 1.0 prohibited downloaded applets from reading and writing files, thus limiting their use in a network.

The sandbox model was "too restrictive for a lot of real development work," said Mark Elenko, a distributed object consultant with Fusion Systems Group, a division of Context Integration, of New York.

JDK 1.1, unveiled last spring, improved upon the sandbox model by introducing the concept of "digital signing," which enables applets downloaded from a trusted sender to read and write files.

While digital signatures alert a user's system if a downloaded applet has been tampered with, the secure stream technology in JCE 1.2 is designed to prevent would-be hackers from attacking transmitted applets in the first place.

JCE 1.2 is being kept separate from JDK 1.2 because of U.S. prohibitions on the export of encryption technologies. While JCE 1.2 implementations such as the key agreement and secure streams are not exportable, the new APIs are, Gong said.

But international customers can work around the U.S. restrictions by obtaining implementations of JavaSoft's APIs from vendors in other countries. One such company is Baltimore Tech- nologies, a security software firm based in Dublin, Ireland.

In other security-related news, Sun's SunSoft division plans to ship its Solaris operating system with a feature for IP packet filtering by mid-year, essentially turning Solaris into a firewall. With Solaris equipped as a mini-firewall, network managers, using Sun client software, can employ IP addresses to regulate access to Solaris-based resources.

This does not mean Sun is giving up on SunScreen, its mainstream firewall. In fact, Sun is beefing up SunScreen by adding features that let it check digitally signed Java applets to see who sent them.

The SunScreen firewall now will be bundled with a secure version of Solaris called the Encryption Firewall Server, as well as Sun Security Manager 4.0 management software, so SunScreen should be easier to deploy.

The whole package will come at a fire-sale price starting at $3,000 per 100 nodes. That is a far cry from the $40,000 price tag on the original product. ■

Java's secure

The Java Cryptography Extensions 1.2 APIs will offer the following new features:

- Symmetric Cipher
  Implements DES and 3DES encryption technology.
- Diffie-Hellman Authentication Technology
  Enables two parties to share keys.
- Java Secure Streams
  Allows secure data streams coming in or going out.
- Secure Java Objects (sealed objects).

Directory service sneak peek

The second beta release of Microsoft Corp.'s Windows NT 5.0 will include several new features designed to help customers manage the operating system's Active Directory Service (ADS) in large, enterprise deployments.

ADS is Microsoft's first attempt to provide a scalable, hierarchical directory service with NT Server. ADS is the cornerstone of all the new distributed services functions, which include a distributed file system and applications support, expected to ship with NT 5.0 late this year.

When the company released its first NT 5.0 beta in September 1997, the software included the bulk of the directory support, such as the object store, which accommodates upwards of 10 million entries; ties to the new underlying Kerberos security service; and administration tools that allow network managers to set up a directory tree.

But NT Product Manager Steven Judd admitted the first beta code lacked some of the "fit and finish" features that would make it easy to administer in large-scale networks.

These new features include the ability to incorporate multiple Domain Name System (DNS) root addresses in a single ADS tree, tighter integration with public key infrastructures, which makes it easier to administer X.509 security certificates, and the ability to customize the administrative view of directory information relative to a manager's access rights.

"Microsoft is in the unenviable position of having to play catch-up to competitors that have had directory services out there for a while," said Larry Gauthier, an analyst with the Burton Group, in Salt Lake City. "But it is innovative stuff like this that might make the larger customers stand up and listen a little harder to [Microsoft's] directory story," he added.

ADS uses the Unix-based DNS to locate servers within the directory. The first NT 5.0 beta allowed only a single DNS root, or name space, such as .business.com. The second beta supports "forests," or multiple DNS roots such as .business.com and .showbiz.com, in the same directory tree. This capability allows an administrator to maintain consistent security policies and access rights across both DNS roots.

"Large corporations have fought hard to get distinct domain names that give them an appropriate Internet identity," Judd said. "We weren't about to force them to get rid of those identities in order to run Active Directory."

— Christine Burns

Network World 161 Worcester Road, Framingham, Mass. 01701-9172, (508) 875-6400
Periodicals postage paid at Framingham, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #0385662. *Network World* (ISSN 0887-7661) is published weekly, except for a single combined issue for the last week in December and the first week in January by *Network World*, Inc., 161 Worcester Road, Framingham, Mass. 01701-9172.

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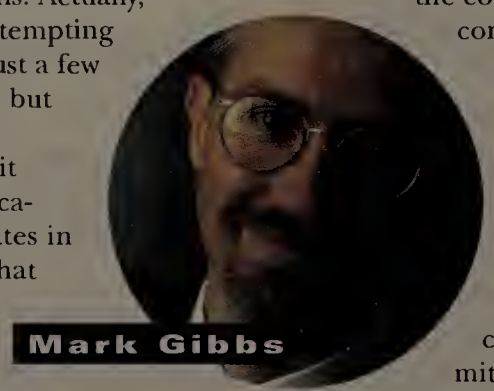
Backspin

PAN pipes for those pesky business cards

And a Happy New Year to you from the Gibbs Institute of Formats and Transmission. I hope you had a fabulous holiday and that Santa brought you everything your heart desired.

Well, we've had quite a time here over the holiday moving data between various applications. Actually, that should be "attempting to move." It was just a few thousand records, but what a pain!


Mark Gibbs

You know how it goes — this application can't read dates in that format and that application can't understand telephone numbers in this format. A few hours using spreadsheets and weird string handling formulas to fix the data and remove the crud and I was ready to tear out my hair (figuratively speaking) and reach for a large adult beverage.

So why is it that so few applications can agree on data formats? Sure, many can read and write the usual role call of formats (comma- or tab-separated variables, DBF files and so on), but the problem lies in the contents of individual records.

For example, you would think by now that we could have all agreed on what a business card record should look like. But no, not quite yet.

I say "quite" because there is an almost standard called vCard for personal information exchange. This was promoted by the Internet Mail Consortium, which also offered vCalendar, a transport and platform-independent calendaring and scheduling information format. These are great ideas and are now IETF drafts, so there's some hope they'll become bona fide standards. Even better, there is a handful of companies (Lotus, Microsoft and Netscape included) offering products that implement these standards.

Great! Now how do I get my vCard to you? Perhaps I could give you my business card with the data encoded on a magnetic stripe or as bar codes on the back. But there's hardly any chance you'd have the gear to read the data.

The solution? How about we just shake hands. "That's it?" you cry incredulously? Well, that's just what a chap named Thomas Zimmerman based his MIT thesis on. His thesis, "Personal Area Networks: Near-Field Intra-Body Communication," concerns the concept of "wearing" computers.

Mr. Zimmerman wants to create Personal Area Networks (PAN) by using the human body like a network cable! As it says in his paper (www.almaden.ibm.com/journal/sj/mit/sectione/zimmerman.html), "Electrostatically coupled PAN devices use the body as a 'wet wire' and can operate on several milliwatts of power."

And PAN devices are intended to be small — small enough to, say, fit in the heel of your shoe. He's even discussed using a simple mechanical generator to power the device (apparently, you generate about 57 watts when you walk and around 10% could be harnessed).

So just by shaking hands or touching a PAN-enabled device, we could send and receive information. Zimmerman suggests that to "maintain privacy control, a wearer must determine when the identification beacon is activated and what type of information can be transmitted. Retail stores could encourage shoppers to transmit needed demographic information by providing perhaps a 5% discount to shoppers who leave their user profile beacons on."

Of course, there could be a downside to this technology. What happens when the PAN device in your shoe gives in to the relentless nagging of your wife's PAN device in her jacket and confesses that you were out drinking rather than working late as you claimed? Her jacket will tell the toaster, the toaster will tell the answering machine, and after that, the game's up!

Shake on it . . . business cards to nwcolumn@gibbs.com or on (800) 622-1108, Ext. 7504.

'Net Buzz

The latest on the Internet/intranet industry

By Chris Nerney

TURN YOUR LIFE AROUND You took a good look in the mirror on New Year's Eve, and you didn't like what you saw.

Alright, it wasn't a mirror, it was your reflection on the computer monitor, but that's the point. You realized you were addicted to the Internet. (We'd say that celebrating the midnight countdown in a chatroom while your avatar wore a party hat was another good tip-off.)

This being the month of delusion, you decide you're prepared to confront your demons and get help. Fortunately, a group called **Lifestream Behavior Center** is ready to treat cyberjunkies.

The organization says there are growing numbers of people whose Internet addiction causes them to escape reality and create a false world in cyberspace.

Funny, we thought that was the whole point of the Internet.

There is a hitch. The center is in Eustis, Fla., so those not residing near there are out of luck. Unless the group offers treatment online.

WHERE EVERYONE IS A VENTURE CAPITALIST . . . It used to be that you had to be a well-connected **Stanford** or **Harvard** MBA to become a venture capitalist.

Now, thanks to a Silicon Valley venture capital firm, anyone with an Internet connection, a browser and $1,000 burning a hole in his pocket can join the elite ranks of the venture capital community.

Technology Funding, Inc., of San Mateo, Calif., has begun offering small investors shares of its newest, $100 million venture fund over the Internet.

Just go to www.techfunding.com, read the prospectus for the VC-6 fund, fill out the online form, and start looking for a country club to join.

Technology Funding says the fund will invest in three areas: the Internet, medical technologies and industrial automation.

. . . OR A CASINO SHILL Know anybody with a gambling problem? Then you may qualify to be a successful marketing entrepreneur for Casino-on-Net, an online multiplayer casino.

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This golden opportunity awaits at www.casino-on.net/market. And you can always find prospects at www.gamblersanonymous.org.

A SECURE INVESTMENT 'Net security management software vendor **Netegrity, Inc.** has received a $2.5 million investment and a promise of $2.5 million more from **Pequot Private Equity Fund.**

Netegrity, based in Waltham, Mass., makes SiteMinder, software that uses the Remote Authentication Dial-In User Service standard for authenticating users through a password or token. SiteMinder also prevents intranet users from accessing Web data beyond permitted boundaries.

Pequot, a unit of **Dawson-Samberg Capital Management, Inc.,** bought 1.67 million shares of Netegrity, which is traded on the Boston Stock Exchange.

HAHT STAYS HOT **HAHT Software, Inc.** of Raleigh, N.C., has secured a third round of funding, totaling $14.4 million.

This late-stage money comes from a group of partners that includes **Menlo Ventures, JMI Equity Fund, Adobe Ventures** and **NationsBank Capital Investors.**

HAHT, which was founded in 1995 by former executives of **Q+E Software, Inc.,** makes a Web applications development platform. Company executives say the new funds primarily will be used to expand sales efforts.

It's only two weeks into 1998, but it's not too early to send 'Net Buzz your hottest Internet- and intranet-related news. Contact Chris Nerney at (508) 820-7451 or cnerney@nww.com.

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